‘A Healthy MTU’ A Mixed Methods Baseline Programme of Research to Empirically Inform a Campus Health Promotion Initiative within an Irish Higher Education Setting

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'A Healthy MTU' A Mixed Methods Baseline Programme of Research to Empirically Inform a Campus Health Promotion Initiative within an Irish Higher Education Setting

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‘A Healthy MTU’

A Mixed Methods Baseline Needs Analysis to Empirically Inform a Campus Health Promotion Initiative within an Irish Higher Education Setting

Andrea Bickerdike

Department of Sport, Leisure & Childhood Studies

A thesis submitted to Munster Technological University in fulfilment of the requirements for the award of Doctor of Philosophy

Supervisors: Dr Cian O’Neill and Ms Joan Dinneen

Submission Date: October 2022
Declaration

I hereby declare that the work contained within this thesis is entirely my own work other than the counsel of my Supervisors, Dr Cian O’Neill and Ms Joan Dinneen of the Department of Sport, Leisure & Childhood Studies, Munster Technological University. This work has not been submitted for any academic award, or part thereof, at this or any other educational establishment. Where the use has been made of the work of others, it has been fully acknowledged and referenced.

Candidate:                                      Date:

Andrea Bickerdike                              12th January 2023

Supervisors:                                  Date:

__________________________                  12th January 2023

Dr Cian O’Neill

__________________________                  12th January 2023

Ms Joan Dinneen
Thesis Abstract

Higher Education Institutions (HEIs) have been called to lead global health promotion actions, yet there remains a dearth of empirically informed ‘Healthy University’ (HU) initiatives. This thesis constituted a baseline mixed methods needs assessment to inform a settings-based health promotion (HP) initiative (‘A Healthy MTU’) within a multi-campus ‘case’ HEI in Ireland (Cork campuses of MTU, formerly CIT). Specific aims were to (i) investigate student and staff health metrics, and (ii) identify the cultural and environmental determinants of health and wellbeing within the case HEI setting. Using a phased, mixed methodology (QUAN-QUAL), five sequential empirical studies were undertaken. Quantitative data were gathered using two web-based health and wellbeing questionnaire instruments, tailored and disseminated to each respective cohort (N=11,261 students, N=1,705 staff). Qualitative analyses encompassed a novel comparative discussion of student and staff health challenges, in addition to thematic analysis of data gathered from a purposive sample of cross-HEI stakeholders (n=16 semi-structured interviews, n=6 focus groups). In total, 2,267 (20.1% response rate) and 279 (16.4% response rate) responses were received to the student and staff questionnaire instruments, respectively. Concerning quantitative metrics were reported by both cohorts, including low energy/vitality (83.7% of students and 83.0% of staff), insufficient sleep (79.3% students, 82.2% staff), indicators of sub-optimal nutrition (74.9% students, 62.1% staff <5 daily servings of fruit and vegetables), and excessive sitting time (65.7% of students, 60.8% of staff). Moreover, health and lifestyle metrics appeared associated with explicit organisational priorities, such as students’ mental health (8 variables predicted 37% of the variance in positive mental health scores), and staff absenteeism (significantly greater stress and absenteeism amongst the least healthy clustered group of staff versus a ‘healthy
Thematic analyses revealed a multitude of ecological barriers to health within an increasingly pressurised higher education environment. Triangulation of participants’ phenomenological experiences with quantitative data enabled the empirical derivation of two practitioner-focussed models that will serve to inform (i) the ecological evaluation of HP interventions and activities within HEI settings, and (ii) the operational delivery of a settings-based campus HP initiative within the complex ecosystem of the case HEI. This research will be of interest to stakeholders within HEIs and large organisational settings, whilst concurrently serving to underpin the design and evaluation of multi-component (individual and environmental) strategies to maximise and measure the impact of ‘A Healthy MTU’.
Acknowledgements

Throughout the course of my studies (and long before that as well!) I feel so lucky to have had the support of family, friends, and a circle of colleagues within MTU. I would like to take this opportunity to say a huge and heartfelt thank you to everyone.

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- Thank you to my friends and colleagues at MTU, and all of the students and staff within the Dept. SLCS. To the usual Bistro coffee suspects of Alan, Kev M, Kev S, Sam, Lisa, Eimear, Con and Thomas - I appreciate the laughs, coffees, chats, and, most of all, the friendship.
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Abbreviations

HEI  Higher Education Institution
HE   Higher Education
HU   Healthy University
HPU  Health-promoting University
IHCF Irish Healthy Campus Framework
NCD  Non-Communicable Disease
PA   Physical Activity
OS   Occupational Stress

Definition of Terms

Health  “A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”
       (World Health Organization [WHO], 1948, p. 1)

Health Promotion “The process of enabling people to increase control over, and to improve, their health”
                   (WHO, 1986, p.1)

Setting for Health “The place or social context in which people engage in daily activities in which environmental, organisational and personal factors interact to affect health and wellbeing”

Healthy University A HEI that “aspires to create a learning environment and organisational culture that enhances the health, wellbeing and sustainability of its community and enables people to achieve their full potential”
                   (Dooris et al., 2010, p. i)
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Bickerdike, A. (2020, February 7th). *A Healthy CIT.* Cork Institute of Technology Senior Staff Breakfast Event, Cork Institute of Technology (Bishopstown Campus), Ireland.
Chapter 1

Introduction
1.1 Introduction

In 1948, health was defined within the Constitution of the World Health Organisation (WHO) as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” (World Health Organization [WHO], 1948, p. 1). This positivist extension of health beyond pathophysiological disease (Fleuret & Atkinson, 2007) was subsequently re-enforced within the Ottawa Charter for Health Promotion (WHO, 1986) and has continued to underpin contemporary health promotion (HP) practice (Potvin & Jones, 2011).

The ‘settings-based approach’ is a prominent intradisciplinary HP paradigm, which posits that health is mediated by, and within, the ecological contexts of cross-sectoral settings (Kickbusch, 2003; Kokko et al., 2014; Whitelaw et al., 2001; WHO, 1986). Such settings include cities (de Leeuw, 2009), schools (Moynihan et al., 2016), workplaces (WHO & Burton, 2010), sports clubs (Lane et al., 2021), and Higher Education Institutions (HEIs) (Dooris et al., 2010; 2020). As microcosmic and multi-faceted societal settings, the governance and operational structures of HEIs typically encompass (i) substantial built environment facilities, (ii) the design and implementation of campus-wide policies, (iii) distinct socio-cultural norms, and (iv) organisational strategic priorities that further shape multi-disciplinary curricula, research, and community outreach activities. Therefore, embedding a consideration for health and wellbeing across all facets of a HEI setting could serve as an inherently ecological approach to positively impact students, staff, and the wider campus community (Holt et al., 2015).

Settings-based HP within HEIs (which is referred to as either a Healthy University [HU], Healthy Campus and/or Health Promoting University [HPU] approach within the
literature) has gained some global traction, as evidenced by the emergence of international networks of practice to further progress the HU agenda (Dooris et al., 2019). Most recently, the Okanagan Charter for Health Promoting Universities and Colleges (2015) directly called on HEIs to embed health and wellbeing across all aspects of their cultures and operational structures. In Ireland, a settings-based paradigm underpins the ‘Healthy Ireland Strategic Action Plan 2021-2025’, and this strategy explicitly recognises the health-promoting potential of HEIs (Healthy Ireland, 2021a). Of further note, recent developments to progress campus HP in Ireland have included (i) the publication of an Irish Healthy Campus Charter and Framework (Healthy Ireland, 2021b), and, crucially, (ii) the resourcing of a Healthy Campus Co-Ordinator within the Higher Education Authority to oversee the national roll out of same (Dept. of Health, 2021).

1.2 Broader Societal Rationale for HP

In a broader societal context, there exists a rationale for HP interventions to ameliorate the socio-economic burdens associated with contemporary population health challenges, such as non-communicable diseases (NCDs) and overweight/obesity. The global cross-sectoral responsibility to enable positive health has also been unequivocally re-enforced (Goal 3: ‘Good Health and Wellbeing’) within the United Nations’ Sustainable Development Goals (United Nations [UN], 2015).

NCDs are chronic, non-infectious conditions, such as cardiovascular disease (CVD), cancers, chronic lung diseases, and diabetes (WHO, 2022a). Purported to cost EU economies €115 billion per year (Organisation for Economic Co-Operation and Development [OECD] & European Commission, 2016), NCDs are associated with a
multitude of (i) socioeconomic (inequities, low socio-economic status [SES]), (ii) demographic (population growth, ageing and globalisation), (iii) environmental (pollution, poor air quality), and (iv) behavioural determinants (Hunter & Reddy, 2013; Prüss-Ustün et al., 2019; Wagner & Brath, 2012). Collectively, 74% of global mortality has been attributed to NCDs (WHO, 2022a), with 91% of all deaths in Ireland attributed to same (WHO, 2018a). From a HP perspective, targeted interventions to address modifiable behavioural risk factors, such as tobacco smoking, hazardous drinking, poor diet, and physical inactivity could serve to prevent a proportion of premature NCD deaths (WHO, 2022b). As a concurrent and pervasive public health challenge, the prevalence of overweight and obesity has substantially increased within the European region since 1975 (overweight +51%, obesity +138%) (WHO, 2022c). In Ireland, the most recently reported overweight/obesity prevalence amongst the general population was 60% (IPSOS MRBI & Dept. of Health, 2019), and the total costs associated with obesity could amount to €9.88 billion by the year 2030 (Keaver et al., 2013).

It is evident that cross-sectoral approaches are required to address public health challenges, and to enable health promoting behaviours at population level (Healthy Ireland, 2021a). Given the substantial magnitude of the Irish higher education sector (Central Statistics Office [CSO], 2021), HEIs constitute a highly scalable network through which to contribute towards broader societal efforts in this regard, through the implementation of capacity-building educational initiatives, in addition to multi-component, campus-based HP strategies.
1.3 Significance of the Research

HEIs concurrently serve as (i) the most advanced stratum of formal education systems, (ii) workplace settings for heterogeneous staff cohorts (Faghy et al., 2022), and (iii) prominent built-environment contexts through which to enable health-promoting behaviours such as physical activity (Butler et al., 2015; Murphy et al., 2015) and healthy dietary choices (Bevan et al., 2015; Deliens et al., 2014).

Moreover, higher education has been posited to substantially shape students’ progression towards increased behavioural, and personal, autonomy during the ‘transition’ from adolescence to adulthood (Al-Nakeeb et al., 2015; Gambles et al., 2022; Murphy et al., 2015). The proportion of young adults aged 25-34 who have been conferred with a HEI award in Ireland exceeds the EU-27 average; 58% vs 41% (CSO, 2021), and recent data reported 246,299 student enrolments within the Irish higher education sector during the 2021/2022 academic year (Higher Education Authority [HEA], n.d.). In a broader societal context, informed campus HP strategies to enable healthier habitual behaviours could constitute a prudent and scalable strategy to reduce the future incidence of NCDs.

However, the seminal College Lifestyle and Attitudinal National (CLAN) survey highlighted an overarching pattern of sub-optimal and risk-related behaviours amongst a cohort of 3,259 undergraduate students within 21 HEIs in Ireland (Hope et al., 2005). More recent cross-sectional studies have also reported a plethora of concerning health and lifestyle parameters (Davoren et al., 2015; Houghton et al., 2010; Mac Neela et al., 2012; Murphy et al., 2015), and the diversification in student profiles within the sector (Gibney et al., 2011) further necessitates repeated cross-sectional multi-domain studies, and/or longitudinal research to monitor the health and lifestyle trends of HEI students.
over time. Moreover, recent discourse has also affirmed the substantial burdens that are placed upon highly-constrained medical and mental health services within the higher education sector (Hill et al., 2020), which further substantiates the rationale for investigations into multivariate associations between HEI students’ health-related behaviours and psychometric indices. In this regard, Study One of this thesis (Chapter 4) aims to identify predictors of students’ positive mental health, to inform the strategic design of preventative campus HP interventions.

In terms of staff, whilst the inherent transience and precarity associated with some higher education roles somewhat complicates cross-sectional ‘head-counts’ (Bickerdike et al., 2022), recent HEA data reported 27,557 contracted staff within publicly funded HEIs (HEA, 2022). It has been previously proposed that HEI staff are likely to exhibit multiple NCD risk factors, and/or sub-optimal cardiometabolic markers (Butler et al., 2015). HEI staff also constitute a heterogeneous cohort in terms of specific job roles, demands, and/or opportunities to engage in health-related behaviours within the habitual ‘working day’ (Faghy et al., 2022). Whilst the construct of occupational stress has been explored (Biron et al., 2008; Ohadomere & Ogamba, 2021; Tytherleigh et al., 2007; Winefield & Jarrett, 2001; Winefield et al., 2003), it appears that the collective health-related behaviours and metrics of HEI staff are relatively under-investigated in comparison to the extensive body of HP literature pertaining to HEI students. Study Two of this thesis (Chapter 5) aims to address this paucity to inform prospective culturally specific and tailored HP interventions.

In terms of HP practice, whilst the settings-based, Healthy University (HU) approach has been intricately theorised (Dooris et al., 2014), there remains a dearth of empirical studies
documenting the meaningful implementation of a macro-level HU policy, and/or the systemic evaluation of such an approach (Suárez-Reyes & Van den Broucke, 2016). The current research aims to address extant gaps in this regard, through the derivation of a triangulated, setting-specific model of the determinants of health and wellbeing within the case HEI. This translational output will serve as an empirical guide for HP practitioners and/or higher education stakeholders, whilst also providing a structural template to guide the ecological mapping, implementation, and/or evaluation of related activities as part of macro-level HU strategies.

Pragmatically, given the magnitude of the higher education sector in Ireland, HP strategies that are aligned with the Irish Healthy Campus Framework (Healthy Ireland, 2021b) could serve to reach, and positively influence, substantial proportions of this population. Nonetheless, due to ongoing funding constraints within the higher education landscape (Chapman & Doris, 2019), it is imperative that campus HP activities are rigorously informed and evaluated to ensure cost-effective allocation of personnel and resources. As a socio-ecological HP needs assessment, the recommendations and conclusions that emerge from this thesis will serve to substantiate the rationale for, and guide the design of, further research and HP interventions within the case HEI. Further, it is intended that these findings will have the potential to transfer to similar organisational settings. In addition, the inclusion of a comparative, dual-cohort study (Study Three, Chapter 6), that was designed to identify health-related challenges of universal relevance to all cohorts of the campus population, will facilitate the direction of further resources to empirically identified thematic priority areas.
In terms of governance and strategy, Senior Management endorsement has been consistently reported as a potent facilitator of tangible commitment to the implementation of settings-based HP within HEIs (Dooris et al., 2020). However, the fiscal case for central resourcing of a transformative campus HP strategy could be challenged by a perceived disconnect between the complex theoretical underpinnings of the settings approach to HP (Dooris et al., 2014) and the more refined organisational mandates and strategic priorities of contemporary HEIs (Newton et al., 2016). Paradoxically, however, intricate associations between health-related issues, such as mental ill-health, and fundamental HEI performance indicators such as student engagement, academic performance, and retention have been previously outlined (Eisenberg et al., 2009; Karwig et al., 2015). To precipitate a meaningful paradigm shift towards a positivist, ‘salutogenic’ perspective of holistic HP within HEIs (Dooris et al., 2017), it is imperative that campus HP strategies are continuously informed by designated research, to ensure purposive and explicit alignment with organisational strategic priorities from the outset.

This thesis constitutes the baseline phase of a research strategy that is intended to ensure the prudent and cost-effective allocation of resources to strategically develop a campus HP initiative in Ireland. In turn, this could serve to sustain Senior Management endorsement of a long-term, transformative HP approach to embed health across all facets of the case HEI (Okanagan Charter, 2015). Whilst settings-based campus HP strategies within Irish HEIs have been disseminated within both peer-reviewed (Darker et al., 2021; Mullins et al., 2017), and grey literature (UCC Health Matters, 2012; University of Limerick [UL], 2019) the scale and breadth of the current research aims to constitute a novel contribution to HP literature and practice.
1.4 Contextual Evolution of the Research

It is well established that setting-specific and/or regional adaptation of HU-aligned HP initiatives may be required to address strategic priorities, and to maximise the cultural validity of communications and actions (Suárez-Reyes & Van den Broucke, 2016). In this regard, the current section (1.4.1 to 1.4.6) aims to describe the situational context to (i) the programme of research presented across the empirical chapters of this thesis, (ii) associated preliminary adjunctive HP activities undertaken by the post-graduate researcher, and (iii) how learnings and experiences in this regard served to further shape key elements of the methodological design and paradigm.

Of note, between 2015 and 2022, key HP advocacy activities undertaken by the post-graduate researcher have encompassed the following:

i. Establishing preliminary structures, and greater visibility of the campus HP initiative, ‘A Healthy MTU’, (formerly known as ‘A Healthy CIT’), within the case HEI (section 1.4.2)

ii. Implementing a suite of opportunistic, collaborative pilot campus HP activities (sections 1.4.5 and 1.4.6)

iii. Representing the case HEI on the National Healthy Campus Network, since the Network’s inception in 2018

iv. As a quasi-embedded researcher (section 1.4.7), engaging in ‘on the ground’ advocacy for the settings approach to HP and for meaningful organisational commitment to the Irish Healthy Campus Charter and Framework (Healthy Ireland, 2021b).
Of note, several sections of the contextual overview provided in sections 1.4.1 to 1.4.6 below have been adapted from a previously disseminated conference ‘case study’ paper, presented at the 2018 ‘Smart Cities in Smart Regions’ conference, which was held in Lahti University of Applied Sciences, Finland (Bickerdike et al., 2018). The complete publication, and all associated presentation materials, are presented in the Appendices section (Appendices A and B).

1.4.1 Fundamental Interpretive Considerations

The overarching purpose of the collection of empirical studies comprised within the current thesis is to inform the strategic development of a settings-based campus HP initiative (‘A Healthy MTU’). As a fundamental interpretive consideration from the outset, it should be noted that the ‘case HEI’ setting described throughout this thesis refers to the Cork campuses of Munster Technological University (MTU), which, prior to the merger of the former entities of Cork Institute of Technology (CIT) and the Institute of Technology Tralee (ITT) on January 1st 2021, formerly constituted ‘CIT’. Whilst internal records document an intent to establish CIT as a health-promoting institute in 2002/2003; anecdotal evidence suggests that such efforts were not sustained. Although a myriad of student services are offered on campus, there has never been a dedicated staff post solely tasked to drive and support HP and/or sustainable development campus activities. In terms of structures and governance, the majority of student services, staffing, and administrative functions operate within the largest central campus of the case HEI, which is located in a western suburb of Cork city (Bishopstown). A number of Satellite Campuses are also situated in the city centre (Crawford College of Art and Design
The present concept of campus HP within the case HEI initially emerged in 2014 as a student engagement and retention initiative entitled ‘A Healthy CIT’. In the absence of a dedicated HP human resource, the Department of Sport, Leisure & Childhood Studies (SLCS) was requested to contribute expertise to establish, and strategically develop this proposed HP entity. In 2015, it was decided that this contribution would comprise of a baseline needs assessment to inform ‘A Healthy CIT’, implemented by the current post-graduate researcher, and endorsed by the Office of the Registrar of the former CIT. It was agreed that the post-graduate researcher would, where possible, assume a quasi-embedded role to implement campus-based HP activities and advocacy as an adjunct to the research process described in this thesis. However, the expected scope and scale of such ‘ad-hoc’ activities were not explicitly defined, and there was no formal budgetary or time allocation in this regard.

As outlined above, an initial conference ‘case study’ paper (Bickerdike et al., 2018), was disseminated to describe preliminary work undertaken by the post-graduate researcher between 2015 and 2018. These preliminary activities included (i) design and implementation of ‘Phase One’ of the current research (Chapter 3), whilst concurrently (ii) endeavouring to develop the campus HP entity itself, and increase its relative ‘visibility’ on campus. As the conference paper (Appendix A) was published prior to the CIT/ITT merger, the nomenclature used within any adapted excepts from same has been amended and/or updated from ‘CIT’ to ‘MTU’ where relevant. Furthermore, the sample preliminary HP branding and marketing materials presented below to exemplify
adjunctive marketing activities undertaken by the post-graduate researcher also pre-dated the merger, and it is envisaged will be updated pending the establishment of a new formal MTU campus HP operational entity. In this regard, a suite of proposed operational campus HP principles have been discussed in Chapter 9, which have been informed by the five empirical studies that collectively comprise this thesis.

1.4.2 Background, Concept and Objectives

A Healthy MTU (formerly A Healthy CIT) is a campus HP initiative that aims to place health, wellbeing, and sustainability at the core of the university’s culture. As outlined above, the current baseline needs assessment commenced in 2015 as a designated research arm of A Healthy CIT within the Department of Sport, Leisure & Childhood Studies (SLCS). In the absence of a HP Officer/Co Ordinator, the management and Institute-wide strategic development of A Healthy CIT (which would later become A Healthy MTU), was also undertaken by the post-graduate researcher as an adjunct to the research process. Following an extensive review of the relevant literature, an initial operating concept of A Healthy CIT as a dual entity was constructed by the post-graduate researcher, and a series of synergistic ‘research’ and ‘practice’ objectives to strategically develop both aspects of the entity were outlined (Figure 1.1).
Figure 1.1 ‘A Healthy CIT’ Operating Concept; synergistic research and strategic development

The practice-based objectives to progress the strategic development of A Healthy CIT were informed by collated insights obtained from a review of the original conceptual framework of a Health Promoting University (Tsouros et al. 1998), local and international case studies (Freudenberg et al. 2013; Sellers et al. 2014; UCC Health Matters, 2012), related HEI campus HP websites, in addition to the seminal works of Dooris and colleagues regarding the application of the settings approach to HP within HEIs (Doherty & Dooris 2006; Dooris 2001; 2006; 2009; Dooris et al. 2010; 2014).

Figure 1.2 presents a chronological timeline of key initial research and practice-based milestones that were achieved between October 2015 and January 2018 (which coincided predominantly with the first two ‘academic’ years of A Healthy CIT’s development; 2015/16 and 2016/17). Essentially, Figure 1.2 illustrates the intrinsically interwoven and
embedded ‘research-practice’ activities undertaken by the post-graduate researcher during the formative conceptualisation and evolution of *A Healthy CIT*.

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**A Healthy CIT – Strategic Development (Institute-wide)**

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic objectives formulated</strong></td>
<td><strong>Site visits, stakeholder engagement</strong></td>
<td><strong>1st collaboration with Student Engagement Office: (‘Good Start’) Branding, formal campus launch. Multi-campus health awareness stations</strong></td>
<td><strong>2nd Collaboration with Student Engagement Office (via ‘Good Start’)</strong></td>
</tr>
<tr>
<td><strong>Designated research arm established</strong></td>
<td><strong>Web-based health questionnaires distributed to all students (n=11,261) and staff (n=1,705)</strong></td>
<td><strong>PA Intervention offering</strong></td>
<td><strong>Student/staff comparative analysis</strong></td>
</tr>
<tr>
<td><strong>Preliminary questionnaire data analysis (students n = 2,688, staff n = 280)</strong></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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**A Healthy CIT – Research Activities (Dept. of Sport, Leisure & Childhood Studies)**

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**Figure 1.2** Preliminary research and strategic milestones during the first two years* of A Healthy CIT’s development *(academic years 2015/16 and 2016/17).*

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**1.4.3 Stakeholder Identification**

Dooris and colleagues (2010) described a myriad of higher-education and public health ‘drivers’ and ‘inputs’ in their theoretical conceptualisation of a ‘Healthy University’. As part of strategic development activities in 2015, the post-graduate researcher completed a pilot internal/external stakeholder analysis for the purpose of identifying both the
potential receivers and influencers likely to play a part in the development of *A Healthy CIT*. Preliminary stakeholders identified in this regard are outlined in Table 1.1.

### Table 1.1 Internal and external stakeholder analysis

<table>
<thead>
<tr>
<th>Internal stakeholders</th>
<th>Receivers</th>
<th>Influencers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students</td>
<td>Senior Management</td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>Sports Officers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medical Staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Counselling Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Campus Catering Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buildings &amp; Estates Officers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff with health/recreation/physical activity as part of their employment remit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External Stakeholders</th>
<th>Local Community</th>
<th>HP Unit of local health service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alumni and future policy makers</td>
<td>Local Sports’ Partnership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential academic collaborators</td>
</tr>
</tbody>
</table>

Of specific methodological relevance to this thesis, this preliminary stakeholder mapping exercise later served to inform the purposive selection of a sample of pertinent stakeholders to participate within the final qualitative phase of this research process (Chapters 7 and 8).

### 1.4.4 Branding and Marketing

It has been postulated that the development of a ‘Healthy University’ may require a dual approach to implement high-visibility ‘ground level’ projects in conjunction with less tangible efforts to generate organisational change at a macro-level (Dooris et al. 2010).
In 2016, to maximise visibility, the post-graduate researcher undertook to oversee the design and development of marketing materials to encapsulate the ideals of *A Healthy CIT*. A bespoke logo, related tagline (‘Your Campus. Your Health. Your Choice’) and a number of corporate display materials to reflect the core goals and inclusivity of the initiative, were conceptualised and designed (Figure 1.3). Until the merger of CIT and ITT in January 2021, these marketing materials were displayed at all initiatives and collaborative events to ensure *A Healthy CIT* was visible to the Institute community as an active entity and core part of campus life.

![Figure 1.3 Sample of ‘A Healthy CIT’ marketing materials](image)

### 1.4.5 Creating and Sustaining a Multi-Campus Presence: Preliminary Activities

During years 1 and 2 of this research process, the post-graduate researcher undertook and/or contributed to a number of pilot initiatives intended to position HP (i) at the forefront of student and staff consciousness, as well as (ii) on the Institute Management’s
agenda. In October 2016, a week-long collaborative pilot of *A Healthy CIT* was rolled out as part of the Institute’s student induction programme (*Good Start* - under the remit of the Student Engagement Office). Initiatives included a healthy cooking demonstration (in collaboration with the Department of Tourism & Hospitality), a series of health-related blog posts, as well as multi-campus (encompassing CIT Satellite Campuses) site visits and information stands to promote awareness of *A Healthy CIT*. Building on the momentum generated from these events, *A Healthy CIT* was formally launched in November 2016 as an Institute-wide HP initiative, serving both students and staff. Further collaborative events to date have included multi-campus health awareness stations, participation in a Linked Schools Mental Health information day (led by the Institute’s Access Service), a mental health ‘Couch Chat’ event involving interactive discourse with sporting role models, further healthy cooking demonstrations, and a Guest Lecture by a visiting Adjunct Professor to the SLCS Department, Prof. Elaine Rush, from Auckland University of Technology. Although all campus events were well-attended, the cooking demonstrations on the Bishopstown (primary) campus were particularly successful, with interest in the event exceeding the venue’s capacity.

### 1.4.6 Campus-Based Physical Activity Offering for Staff

In terms of the overarching strategy, the research objectives originally developed had encompassed the design and implementation of a campus-based physical activity intervention for staff of the case HEI (Figure 1.1 and section 1.4.2). In this regard, a robust and reliable design was constructed by the post-graduate researcher and a ten-week group-based campus intervention, requiring participation on three occasions per week (lunchtime), was offered to the CIT staff cohort in January 2017. The intervention was
offered free of charge, under the research remit of *A Healthy CIT*. Inclusion criteria were medically-fit staff members who were not engaged in formal sport or achieving 150 minutes’ per week of moderate-vigorous physical activity, as per Irish national guidelines (Dept. of Health and Children & Health Service Excutive [HSE], 2009; Healthy Ireland & Dept. of Transport, Tourism & Sport [TTAS], 2016). However, substantial barriers were experienced that precluded the recruitment of feasible participant numbers, and the intervention did not proceed. Following general indications of interest, less than 10 staff participants were in a position to complete all elements of the intervention and it was ceased following baseline testing. Subjective evidence suggested that the lack of participation was predominantly attributable to timetabling constraints.

1.4.7 Preliminary Conclusions and Experiential Reflection

As outlined above, the post-graduate researcher’s remit, and the evolution of *A Healthy MTU* as a campus HP entity, have been intrinsically interwoven from the outset. Efforts of the post-graduate researcher to complement this research process by establishing a visible campus HP ‘entity’ have been enabled by the culture of collaboration within the case HEI, which has served as a potent facilitator of its preliminary strategic development. In the absence of designated core funding and/or formal allocation of a human resource to lead this campus HP initiative, internal traction and campus visibility were achieved at the outset solely through collaborative initiatives with internal stakeholders that maximised the potential of the existing campus facilities.

Although campus visibility initiatives were always well received, it must be borne in mind that the entire theoretical basis of the settings-approach to HP, and in particular the
‘Healthy University’ approach, centres around the integration of health and wellbeing into the culture, educational activities and governance policies of a HEI at a macro-level (Dooris et al. 2014; Newton et al. 2016; Okanagan Charter 2015; Tsouros et al. 1998). The absence of funding, and a campus driver of this agenda, creates a danger that campus HP will become merely another segregated campus service as opposed to a truly holistic and whole-system implementation of the ideologies of a healthy university. Barriers posed by the accepted constraints of the higher education environment (such as increased student numbers coupled with reductions in funding) also impeded the early strategic development of A Healthy CIT. From a governance and operational perspective, a preliminary organisational structure (Steering Committee, Executive Committee and Special Interest Group) was proposed. However, timetabling constraints and heavy workloads of senior Institute figures meant that the originally proposed Steering Committee did not formally convene.

Similarly, subjective evidence suggests that wider organisational barriers were a determining factor in the failure to recruit staff participants for the aforementioned campus-based physical activity intervention. This intervention was entirely free of charge and state of the art facilities were available within the SLCS Department. However, barriers to participation reported anecdotally by participants were predominantly timetabling commitments and heavy academic workloads. At the time of recruitment, academic staff were frequently timetabled to teach during the traditional lunchtime hour and an increase in working hours imposed by a National Public Service Agreement in 2010 had resulted in many administrative staff taking a reduced lunch break of thirty minutes. At the level of the individual, it is also possible that the target staff cohort were not at an optimum stage of readiness (‘Action Stage’) to change their sedentary lifestyle,
in the context of the Transtheoretical Model of Behaviour Change (Prochaska & DiClemente 1983). The overall lack of participation was indicative of the existence of complex and multi-factorial barriers to physical activity ingrained within the constraints of the higher education environment, and further re-enforced the need for an overarching, empirically informed campus HP strategy.

Experiential Shaping of the Research Design: Foreword by the Post-Graduate Researcher

Experiential learnings derived from the preliminary activities outlined above served to substantially shape both the methodological design of the empirical studies presented in this thesis, and indeed my personal paradigm and perspective as researcher. The concurrent HP activities undertaken alongside, and intrinsically interwoven with this research since my initial enrolment in 2015/16, and subsequent appointment as a full time Academic Staff member within the case HEI in 2018, has resulted in an organic progression towards becoming an embedded researcher within the context and case setting itself.

In the absence of a designated HP budget or human resource, the pilot HP activities outlined above were not empirically informed or integrated within any cohesive macro-level HP strategy. Nonetheless, some preliminary visibility for A Healthy CIT as an initiative was attained through leveraging of internal partnerships, collaborations, and strategic internal alliances. Many initiatives involved contributing expertise and/or time towards a breadth of health and wellbeing ‘projects’ or ‘events’ that were habitually undertaken by multiple campus stakeholders, such as the Student Engagement Office, Access Service, Sports Office, Department of Tourism & Hospitality, and the Students’
Union. It was evident however, that these activities remained siloed and heavily dependent on opportunism.

During preliminary development, the discord between the pragmatic realities within the multi-campus HEI setting, and the systems-based, ecological tenets of the settings approach to HP became apparent. Whilst it served as a useful temporary HP vehicle through which to initiate HP research and momentum, implementing campus HP as an adjunct to research activity, in the absence of a designated Co-Ordinator or a budget, is wholly unsustainable. Early experiences during years 1 and 2 of the development of *A Healthy CIT* indicated that a seismic cultural shift would be required to structurally embed health within the culture of the setting. During that time, it appeared that health and wellbeing transcended both the HEI’s research agenda, in addition to a breadth of campus stakeholders’ interests and remits. However, it lacked any tangible resourcing, and requests to contribute to health-related initiatives projects soon exceeded capacity to deliver. Two visual schematics that illustrated the sub-optimal preliminary structures in this regard (Appendix B) were later adapted and utilised as visual prompts during semi-structured interviews and focus groups with campus stakeholders during the final qualitative phase of this thesis (Study Four and Study Five, Chapters 7-8).

Of note, at the current time of writing, there remains no designated HP officer or ‘Healthy Campus’ Co-Ordinator within the case HEI. Whilst agreement in principle with the Irish Healthy Campus Framework (*Healthy Ireland, 2021b*) is evidenced by the case HEI’s (i) acceptance of Healthy Campus seed funding as part of a national seed funding strategy implemented by the Higher Education Authority in 2021, and (ii) signing of the Healthy Campus Charter on January 9th 2023, there remains no mandated structure or internal
strategy through which to co-ordinate progression towards implementing the framework. The ‘state of play’ as regards campus HP structures and processes is further explored in Study Five (Chapter 8) of this thesis.

In terms of methodological and pragmatic limitations, my experiences during early phases of this research process also indicated that A Healthy MTU’s overarching long term goals to enact a settings-based approach to HP need to be pragmatically aligned with the inherent priorities, and largely outcome-oriented culture of the contemporary higher education sector. This, in turn, somewhat shaped several methodological decisions and analytical approaches undertaken within the empirical studies that collectively comprise this thesis (section 1.6). For example, although it may appear to diverge from a salutogenic settings-based HP paradigm, the emphasis on the positive predictors of students’ mental health in Study One (Chapter 4) was borne out of my exposure to substantial sectoral discourse pertaining to students’ mental health and wellbeing, and the extant pressures on traditional HEI campus support services in this regard. Finally, the anecdotal barriers to engagement described by prospective participants during the recruitment process for the above-referenced staff physical activity intervention also shaped the direction of qualitative enquiry into ecological and cultural determinants of health and wellbeing within the final phase of this thesis (Chapters 7 and 8). Notably, it also substantiated the rationale to include a comparative analysis of student/staff habitual interactions with the campus physical activity facilities within the scope of Study Three (Chapter 6). Essentially, in its totality, the programme of research presented in the current thesis aspires to theoretically root itself within a settings-based paradigm, but has equally been experientially shaped by the constraints and context of the case setting.
1.5 Research Aims

The purpose of this thesis is to empirically inform the strategic development of a settings-based, HU-aligned HP initiative within a multi-campus HEI in Ireland. As an overarching campus HP needs assessment, this research adopted a mixed-methods design (QUAN-QUAL), which was implemented across five empirical studies. Each study was designed to address an extant gap within HP literature, and simultaneously constituted a sequential component of the broader research strategy to inform a triangulated model of the determinants of health and wellbeing within the case HEI.

As outlined within each of the respective empirical chapters of this thesis (Chapters 4-8 inclusive), the specific objectives of each study were as follows:

**Study One (Chapter 4)**

- Investigate the self-reported health and lifestyle parameters of the student population in the case HEI, and examine for sex-related differences in same
- Identify, and model, the significant predictors of positive mental health within this cohort, as indicated by scores on a validated psychometric scale

**Study Two (Chapter 5)**

- Explore the health and lifestyle parameters reported by staff of the case HEI, stratified by sex and job-category
- Examine for the presence of distinct clustering of health and lifestyle parameters amongst the staff sample, as evidenced within previous Irish research amongst the general Irish population (Conry et al., 2011)
Determine whether significant differences in key organisational (self-reported absenteeism, length of service, weekly working hours) and public-health metrics of interest (BMI, perceived stress) exist between staff who exhibit the ‘healthiest’ clustered lifestyle patterns, relative to staff exhibiting less optimal lifestyles

**Study Three (Chapter 6)**

- Comparatively analyse the cumulative health risk, and self-perceived metrics, reported by students and staff of the case HEI
- Explore and analyse the preliminary qualitative perspectives of students and staff regarding HP activities within the case HEI
- Review quasi-indicators of each cohort’s habitual interactions with the HEI’s physical activity facilities and food environment
- Triangulate all findings to identify thematic prioritisation areas to inform the development of a proposed settings-based, HU-aligned HP initiative

**Study Four (Chapter 7)**

- Investigate the personal definitions, and/or perspectives of health and wellbeing described by students and staff
- Examine the lived experiences of students and staff to identify extant barriers to, and/or facilitators of, health and wellbeing under the remit of the case HEI
- Triangulate these qualitative data with previous quantitative findings (across the thesis to date), to derive a comprehensive ecological model of both overt and latent determinants of health and wellbeing, tailored to the case HEI setting
Study Five (Chapter 8)

- Explore student and staff perspectives regarding the rationale for campus HP and elicit perceptions of, and/or previous participation in, activities under the remit of ‘preliminary’ campus HP operational structures (see section 1.5)
- Ascertain views of students and staff regarding current health and welfare supports within the case HEI
- Elicit and explore student and staff perceptions regarding optimal operational structures, resourcing model(s) and the feasible scope of a campus HP initiative within the case HEI
- Similarly to previous work (Dooris et al., 2010; Dooris et al., 2020), identify any latent ‘drivers’ and/or internal synergies that could serve to progress the implementation of a Healthy University-aligned campus HP initiative, within the operational ecosystem of the case HEI

1.6 Overview of the Thesis

Chapter 1: Introduction

This chapter provides a description of the purpose, and significance, of this research. The broader societal rationale for HP is outlined, and a fundamental introduction to the premise of the settings-based approach to HP within HEIs is provided. Given that this thesis aims to inform a campus HP initiative, the global ‘call to action’ comprised within the Okanagan Charter for Health Promoting Universities and Colleges (2015), in addition to the more recent publication of the Irish Healthy Campus Charter and Framework (Healthy Ireland, 2021b), are noted. The overarching aim of the research is summarised,
and the specific objectives of each of the five empirical studies are presented. Notably, as a fundamental ‘signposting’ synopsis, this chapter also comprises a contextual overview detailing (i) the evolution of the current research, and (ii) preliminary campus HP activities within the case HEI setting, which has been adapted from a previously disseminated conference paper (Bickerdike et al., 2018). This is followed by a brief reflection on how the researcher’s preliminary experiential learnings in this regard served to shape aspects of the research paradigm and methodological design. Finally, a synopsis of each of the nine chapters of this thesis is provided.

Chapter 2: Literature Review

Chapter 2 constitutes a narrative literature review that provides an insight into the theoretical underpinnings of campus HP practice, in addition to the predominant determinants influencing the health and wellbeing of HEI students and staff within the contemporary HE environment. Section 1 explores the emergence of HP, the determinants of health, and theoretical approaches underpinning HP practice. Section 2 outlines the applications of the settings-based approach to HP in detail, with a specific emphasis on HEIs as HP settings. This section is comprised of peer-reviewed studies, in addition to relevant grey literature and strategic documents. Finally, Section 3 focusses on literature pertaining to the health and wellbeing of campus populations. This section commences with an overarching methodological commentary on the substantial body of literature that has investigated the health and wellbeing parameters of HEI students, which is followed by more detailed sub-sections summarising literature within a series of health-related domains. The final sub-section of the review discusses the health and wellbeing challenges that have been reported by HEI staff, as a complex, yet somewhat less-researched, cohort.
Chapter 3: Methods

This chapter serves to provide a macro-level overview of the triphasic mixed methods approach adopted across the breadth of this thesis (Phase One; ‘baseline quantitative’, Phase Two; ‘transitional’, and Phase Three; ‘final qualitative’). The rationale for, and stepwise implementation of, each phase is discussed, and the relevant empirical studies comprised within each phase are described. Notably, this chapter provides an insight into the design and development of the web-based questionnaire instruments that were used to gather baseline quantitative data from both students (n=2,267) and staff (n=279) in the case HEI. Validated scales comprised therein are also described, which serves to provide a preliminary interpretive context to the quantitative findings presented in Chapters 4-6. Crucially, this chapter also describes the design, sampling strategy, implementation protocols, and analytical approach employed for the final qualitative phase of this research. The inductive thematic analysis of the qualitative data corpus is described, in addition to the subsequent deductive derivation of the final themes that ultimately constituted Study Four (Chapter 7) and Study Five (Chapter 8).

Chapter 4: Empirical Study One

As the first empirical, peer-reviewed study (Bickerdike et al., 2019), this chapter investigates the quantitative health and lifestyle parameters of a sample of students (n=2,267) within the case HEI. The chapter commences with a focussed introduction and brief review of relevant literature. A detailed methodological description of the items and scales from the student web-based instrument that were encompassed within the study is also provided. Comprehensive exploratory analyses are described, and findings are reported across a breadth of health and lifestyle domains such as general health, body habitus (perceived and calculated), nutritional behaviours, physical activity, sitting time,
alcohol consumption, tobacco smoking, illicit drug use, sexual health, mental health, sleep, and social media use. Between-sex differences are reported using Chi Squared tests for Independence, and Mann-Whitney U tests, as appropriate. The implementation and interpretation of a multiple linear regression model to identify the significant predictors of students’ positive mental health (as measured on the 4-item Energy and Vitality Index [EVI]) is discussed.

Chapter 5 Empirical Study Two

This chapter reports on a cross-sectional, questionnaire-based study that explored and investigated the quantitative health and lifestyle patterns of a sample of staff from the case HEI (n=279) (Bickerdike et al., 2022). An initial overview of the (i) constraints and challenges within the higher education sector and (ii) relevant literature reporting on the health and wellbeing of HEI staff cohorts is provided. In addition to a methodological summary of all relevant questionnaire items and validated scales as appropriate, this chapter also provides an overview of the demographics, habitual behaviours and health-related metrics of staff across the domains of general health, quality of life, somatic symptoms and/or self-reported cardio-metabolic risk factors, body habitus (perceived and calculated), fruit and vegetable intake as a surrogate indicator of dietary quality, physical activity and sitting time, drinking behaviours, tobacco smoking, sleep patterns, mental health, perceived stress, work-life balance, and job satisfaction. Descriptive analyses are stratified by sex and job category (‘Academic’ vs. ‘Management’ vs. ‘Clerical/Support/Other’). The implementation of a cluster analytical procedure to identify distinct groups of individuals exhibiting characteristically clustered patterns across multiple health and lifestyle domains is outlined. Findings from a series of between-group analyses (Mann-Whitney U tests/Kruskall Wallis Tests) to examine
between-cluster differences in fundamental organisational and/or public-health metrics are presented.

**Chapter 6 Empirical Study Three**

Within the context of the phased progression from quantitative to qualitative methods across Chapters 4-8 of this thesis, this chapter constitutes a ‘transitional’ mixed-methods descriptive case study that compared the health-related metrics reported by students and staff, within the socio-ecological context of the case HEI setting. A preliminary literature review rooted in a socio-ecological paradigm is included, within which the rationale for the study is outlined. Methodological descriptions encompass the derivation of two novel quantitative indices to compare the (i) co-occurrence of risk-related health metrics (‘Health Risk Index’) amongst, and (ii) health-related perceptions (‘Health Perceptions Index’) of, both students and staff. Further comparative analyses of habitual interactions with the campus food and PA environment, supported by qualitative perspectives (shared within an optional free-text item comprised within the students and staff questionnaire instruments disseminated in the baseline phase of the research), are also presented. Additional qualitative data gathered from a desk review of pertinent documentation is also discussed to provide context to the operational structures of the case HEI. Finally, pertinent thematic priorities that will serve to guide both future research, and the development of a sustainable HU-aligned campus HP initiative within the socio-ecological context of the case HEI, are discussed.

**Chapter 7 Empirical Study Four**

This chapter constitutes a qualitative study that investigated and explored the lived experiences of a purposively recruited sample of students and staff from the case HEI.
The chapter commences with a preliminary literature review which provides initial context to the purpose and scope of the study. Within this review, the rationale for the study is evidenced by the complexity of health as a socio-ecological construct, yet concurrent dearth of Irish research investigating the latent socio-cultural determinants of health-related behaviours within contemporary HEIs. A methodological description, and justification, of the dual-phased inductive-deductive qualitative analytical paradigm employed is outlined. Four thematic ecological levels, at which health and wellbeing determinants are posited to reside (individual perspectives, inter-personal relationships, campus environment, and organisational/sectoral) are presented and discussed. Finally, qualitative data are triangulated with earlier quantitative findings (Chapters 4-6) to derive a practitioner-focussed, empirical schematic model of the determinants of health and wellbeing within the case HEI.

Chapter 8: Empirical Study Five

This chapter presents the second study derived from the qualitative data corpus comprised within this thesis. Purposively designed to inform an ecologically valid, and sustainable, campus HP operational structure to implement the Irish Healthy Campus Framework (IHCF) within the ecosystem of the case HEI, this chapter examines the qualitative perspectives of students and staff regarding (i) the rationale for HP, (ii) current campus HP activities/initiatives, and (iii) current network of health and welfare supports within the case HEI. Following a deductive analytical approach, ten overarching themes are presented, firmly aligned with the settings-based paradigm and seminal literature pertaining to the ‘Healthy University’ approach. The implications of participants’ shared perspectives for both future campus HP research, operational structures, resourcing, and delivery of the IHCF are discussed.
Chapter 9: Discussion, Recommendations for Future Research, and General Conclusions

Cognisant of the substantial discussion already comprised within each empirical study, this concluding chapter serves to provide a macro-level overview and critical discussion of the most pertinent findings of critical relevance to the development of an ecologically valid, and empirically informed, campus HP initiative within the case HEI setting. A brief overview of the purposive mixed methodology is outlined, and subsequent sections are structured to outline and discuss the recommendations for future research and conclusions that can be inferred from the implementation of each respective phase. The practical applications of the triangulated model of the determinants of health within the case HEI (first proposed in Chapter 7) are also discussed. The penultimate section of the chapter proposes a bespoke campus HP operational structure, in addition to a series of recommended actions that will be required to implement the recommendations of the Irish Healthy Campus Framework (IHCF) within the culture and context of the case HEI. The final section concludes with an overarching synopsis of macro-level empirical and experiential insights.

Appendices

Given the breadth of the current research, and its implications for practice, a collection of supporting documentation has been appended in three parts. Part one (Appendices A-D) constitutes pertinent publications to date (2 peer-reviewed articles, 1 peer-reviewed conference paper and relevant presentation materials associated with same). Part two (Appendices E-K) comprises of multiple conference presentations and disseminations in relevant fora, including (i) an oral presentation at the 2022 International Health Promoting Campuses Symposium, (ii) an oral presentation at the 2019 European First Year Experience (EFYE) Conference, (iii) a presentation delivered to the Irish Healthy Campus
Network, (iv) an invited speaker presentation to the Trinity College Dublin Healthy Campus Committee, (v) an invited speaker presentation at an MTU (formerly CIT) Senior Management event, and (vi) two publications in the UK Healthy Universities’ Network Biannual Newsletter. Part three (Appendices L-T) contains relevant supplementary materials and supporting documentation, including the student and staff questionnaire instruments utilised to implement Study One (Chapter 4) and Study Two (Chapter 5), respectively.
Chapter 2

The Role and Function of Health Promotion within Higher Education Settings: A Narrative Review
2.1 Introduction

This chapter presents a narrative review which aims to provide a comprehensive insight into the evolution, and theoretical underpinnings, of contemporary health promotion (HP) practice within Higher Education Institutions (HEIs). The review commences with an exploration of the disciplinary emergence of HP, and its pertinent theoretical perspectives (section 2.2). Secondly, an articulation of the settings approach to HP is provided (section 2.3), which serves to theoretically inform subsequent discussion pertaining to its implementation within the specific context of HEI settings (section 2.4). The final section of this review (section 2.5) comprehensively explores the health and wellbeing status of HEI campus populations as the primary population stakeholders in, and beneficiaries of, campus HP interventions.

The settings approach to HP, within which this thesis is firmly rooted, extends beyond individual health risks and lifestyle behaviours to encompass ‘whole-setting’ organisational, environmental, and broader systems-based determinants of health (Dooris et al., 2014; 2020; Whitelaw et al., 2001). Concurrently however, it has been proposed that meaningful practice-based integration may necessitate alignment with established population needs within a setting (Dooris et al., 2020), to leverage the settings approach as a salutogenic (Dooris et al., 2017) and holistic paradigm through which to examine and address complex health challenges (Dooris, 2013). Although framed within the context of HEI specific determinants where relevant, section 2.5 is purposively stratified into subsections pertaining to domains of health, which have been derived from a review of population studies involving both HEI students (sections 2.5.1 to 2.5.5) and staff (section 2.5.6). As recommended by Dooris (2009), this is intended to highlight initial intervention
and/or “entry points” (p.33) for settings-based campus HP strategies, cognisant of the pragmatic constraints within the contemporary higher education sector.

The body of literature included within this chapter is comprised of both peer-reviewed academic sources, further supplemented with pertinent grey literature such as Government reports, HP strategic frameworks, and/or World Health Organisation (WHO) outputs, as relevant and appropriate. Peer-reviewed sources were identified using the ‘multi-search’ function accessible via the Munster Technological University (MTU) library website, through which pertinent databases were searched, including EBSCOHost Collections, Science Direct, Emerald Insight, SAGE, Scopus, SPORTDiscus, and Ebook Central. Additional searches were also conducted on Google Scholar, PubMed, and PLOS ONE, as necessary. Relevant grey literature was retrieved from European Union (EU), Non-Governmental Organisations (NGOs), government, and/or organisational websites as appropriate.

Given the substantial breadth of the review, and the associated body of literature, systematic and/or narrative reviews were preferentially selected where possible. The reference lists of included studies were also reviewed to identify further relevant literature. Between 2016 and 2022, regular database searches were carried out, and key Boolean phrases included, but were not limited to, ‘health promotion’, ‘settings-based health promotion’, ‘healthy settings’, ‘healthy universities*’, ‘health OR wellbeing AND university* students’, ‘health OR wellbeing AND university* staff’*. Additional keyword searches tailored to each health-related domain were also conducted (for example ‘physical activity AND university* students’*, or ‘occupational stress AND university*
staff*). Finally, methodological search terms included ‘health questionnaires university* students (which were also repeated for staff).

2.2 Theoretical Basis of HP

2.2.1 History and Emergence of HP

The fundamental ethos of promoting positive health has traversed history (Mold & Berridge, 2013; Green et al., 1999) residing within, and ultimately diverging from, public health policies and agendas. In a historical review, Madsen (2017) described a distinct public interest in the concept of HP as early as the 19th Century, driven by an accumulating body of literature relating to health-promoting behaviours that was available to an increasingly literate population. Interestingly, the limitations of public health, which was primarily concerned with disease prevention through sanitation and immunisation, appear to have been recognised as early as the 1920s, with documented evidence of HP posited as a means of extending the scope of public health to encompass broader social and environmental determinants (Madsen, 2017).

2.2.2 Ottawa Charter for Health Promotion

As a seminal document underpinning more contemporary HP practice, the Ottawa Charter defined HP as “the process of enabling people to increase control over, and to improve, their health” (WHO, 1986, p.1). The Charter was an outcome of the first International Conference on Health Promotion in 1986, and outlined the socio-economic and environmental ‘pre-requisites’ to positive health, ranging from fundamental requirements such as food and shelter, to broader socio-ecological determinants such as sufficient
educational capacity, and stable socio-economic and environmental conditions. The Charter explicitly extended the scope of collective responsibility for health and wellbeing beyond traditional health services, to include international governments, organisations, media, and all facets of contemporary society. A series of multi-level and cross-sectoral ‘actions’ were outlined, as summarised in Table 2.1.

**Table 2.1** HP Actions required at various levels of socio-ecological influence, as conceptualised within the Ottawa Charter for Health Promotion (WHO, 1986)

<table>
<thead>
<tr>
<th>Level of influence</th>
<th>Action(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Policy</td>
<td>▪ Enable policy makers to embed a consideration for health within cross-sectoral policies</td>
</tr>
</tbody>
</table>
| Societal Settings and Environments | ▪ Adopt a socio-ecological perspective, cognisant of the complex habitual interactions between individuals and their environments, and the symbiotic relationship between positive health and sustainability  
                                       | ▪ Enable and support health within habitual occupational and leisure environments                                                          |
| Health Services                    | ▪ Reconfigure traditional health services, to encompass a holistic consideration of the individual, in addition to a cross-sectoral responsibility for health and wellbeing. |
| Communities                        | ▪ Empower communities through participation and ownership of HP activities                                                                  |
| Individual level                   | ▪ Enable individuals to engage in healthier behaviours through capacity building and life-long education.                                    |

From the socio-ecological perspective of the Ottawa Charter, health was viewed as a product of individuals’ habitual decisions and interactions within the cultures and context of societal settings (Potvin & Jones, 2011). This concept has subsequently served to inform the ‘settings-based’ orientation within the discipline of HP (section 2.3). Despite this socio-ecological ethos, however, a bias towards individualistic approaches appears to have persisted within the discipline of HP (Thompson et al., 2018). This has been evidenced within a recent study involving 193 members of the European Public Health Association’s HP division, whereby “developing personal skills” was the most commonly implemented Ottawa Charter action area (Wilberg et al., 2021, p. 3). Rigorous
implementation and evaluation studies are essential to measure the impact of activities and initiatives that enact the values of the Ottawa Charter (Potwin & Jones, 2011; Thompson, 2018), and also to attain an optimal equilibrium between the objectivity of public health and the socio-ecological ideology of HP (Potvin & Jones, 2011).

2.2.3 Theoretical Perspectives Underpinning HP

Theories, models, and frameworks can be valuable for the purpose of comprehending and designing structured actions to address complex issues (Dooris et al., 2014). As a discipline that encompasses individual-level behaviours in addition to broader environmental and policy-driven societal determinants, HP has been informed by a multitude of behavioural, ecological, and sociological theoretical perspectives (Nutbeam, 2013).

Ecology

In a glossary of multi-disciplinary applications of ecological analogies, McLaren and Hawe (2005) described the ecological perspective to HP as being cognisant of the existence of, and interactions between, multiple hierarchal environmental levels of influence that collectively determine human health. An ecological approach to HP therefore, considers health as the outcome of the interactions of individuals within, and exposure to, these multiple levels of environmental influences such as interpersonal relationships, structures and contexts of prominent societal settings and communities, in addition to macro-level socioeconomic and policy-driven influences (Kok et al., 2008). Pragmatically, these ecological levels of influence are perceived as concurrent targets for
the purpose of implementing and evaluating multi-level HP interventions (Crosby & Noar, 2011; Rowley et al., 2015).

**Salutogenesis**

Salutogenesis has been referenced within international literature as a useful paradigm through which to consider the promotion of health within HEI settings (Dooris et al., 2017). Pioneered by Aaron Antonovsky, the salutogenic perspective is essentially a shift away from the study of pathophysiological causes of illness (‘pathogenesis’), towards the purposive investigation of the determinants of positive health and wellbeing (‘salutogenesis’) (Lindström & Eriksson, 2006).

**Social Determinants of Health**

In terms of health-related determinants, it is well established that vast global health inequalities are underpinned by a myriad of social and economic factors beyond the level of the individual (Marmot, 2005). As a model originally developed to guide the development of policies to address health inequalities within society (Dahlgren & Whitehead, 2021), the ‘Dahlgren and Whitehead Model’ is a visual depiction of these ‘determinants’, as illustrated in Figure 2.1 (Dahlgren & Whitehead, 1991).
In this model, health is conceptualised as being influenced by a series of concentric ‘layers’, arranged in a purposive wrap-around structure, commencing with macro-level socio-economic determinants, and ultimately narrowing in scope to culminate in individual characteristics at a micro level.

As one of the most widely recognised and cited resources within HP literature and practice, the efficacy of this model has been attributed to its (i) relative simplicity, (ii) salutogenic focus on the cross-sectoral creation of health, and crucially (iii) its visual demonstration of the role that multi-sectoral policy makers can play in mediating determinants of health, beyond the direct scope of traditional health services (Dahlgren & Whitehead, 2021).
Systems Perspective

As a lens through which to extend cross-sectoral HP reach (Lane et al., 2021; Power et al., 2022), ‘systems thinking’ has also gained prominence as a viable perspective to conceptualise intricate synergies between the ‘actors’ in, and constituent components of, ecological environments that determine health (Best, 2011; Crane et al., 2022; Joyce et al., 2018; Naaldenberg et al., 2009). Through this paradigm, HP settings or contexts are viewed as complex ‘open systems’, comprised of multiple inter-related components (Dooris, 2006; 2009; 2013) that collectively reside within, and interface with a broader contextual environment (Dooris, 2006; 2009; Naaldenberg et al., 2009; Paton et al., 2005). A “whole-of-system” approach to HP is advocated (Crane et al., 2022, p. 9), cognisant of the relative entropy and unpredictability of reciprocal interactions between system components (Best, 2011). Systems approaches are therefore inherently flexible (Crane et al., 2022; Joyce et al., 2018; Matheson et al., 2020), and should be evaluated through mixed methods approaches as opposed to time-bound quantitative evaluations of specific health outcomes (Rosas & Knight, 2019).

2.3 Settings Approach to Health Promotion

As a contemporary and cross-cutting approach that draws upon the Ottawa Charter and, in turn, a breadth of perspectives outlined above, the discipline of HP has witnessed a shift towards the ‘settings-based approach’, which posits that health is created and influenced by the structures and environments within habitual societal settings. In this context, a setting has been defined as “the place or social context within which people engage in daily activities in which environmental, organisational and personal factors interact to affect health and wellbeing” (WHO, 1998, p. 19). As outlined in section 2.2.3
above, HP settings can be considered complex systems that, at a macro level, are symbiotic with the external environment (Naaldenberg et al., 2009; Paton et al., 2005).

Essentially, the settings approach is mutually and ecologically cognisant of individual, inter-personal, environmental, and broader social determinants of health (Bloch et al., 2014; Dooris, 2006; Hansen-Ketchum et al., 2020; Newman et al., 2015). Its crucial tenet is a ‘whole-setting’ perspective to sustainably embed health within the cultural context and core operations of a setting, as opposed to merely constituting the delivery of discrete HP projects or risk-focussed behavioural interventions (Kickbusch, 2003; Newman et al., 2015; Paton et al., 2005; Poland et al., 2009; Whitelaw et al., 2001). The adoption of this approach across societal settings (municipal, educational, organisational, occupational, recreational or virtual) has been postulated as a prudent, macro-level strategy to enhance population health (Newman et al., 2015; Poland et al., 2009), whilst expanding HP laterally across contexts and disciplines (Whitelaw et al., 2001).

2.3.1 Pragmatism and Implementation

The potential of the settings approach as a conduit through which to sustain impactful organisational change (Paton et al., 2005), leverage scalable cross-sectoral HP collaborations (Bloch et al., 2014; Dooris, 2013), and advocate for health-promoting public policy (Newman et al., 2015) has been widely acknowledged. Pragmatically however, the cultural and geographical diversity of HP settings, in addition to variances in magnitude, resources, and personnel (Poland et al., 2009), preclude the distillation of the approach into a single framework or overarching strategic implementation plan (Dooris, 2013; Whitelaw et al., 2001). Whilst well-accepted to constitute a holistic,
salutogenic, ecological, and systems-based orientation to HP (Dooris, 2013; Dooris et al., 2014; 2017; Kokko et al., 2014), the settings approach has also been aligned with organisational development (Dooris et al., 2014; Paton et al., 2005), urban planning (Barton & Grant, 2013), and sociological theories (Dooris et al., 2014; Whitelaw et al., 2001). This conceptual diversity has posed pragmatic challenges in terms of both implementation and systematic evaluation (Dooris, 2013; Newman et al., 2015).

In a seminal review of the application of the settings approach to HP, Whitelaw et al. (2001) acknowledged the diversity of real-world HP settings and contexts, and argued against excessive “homogenization of practice” (p. 341). Variances in the extent of the implementation of the settings approach were outlined and categorised into five ascending ‘models’, which ranged from a “passive” implementation of educational or behavioural interventions, to a more “comprehensive” approach encompassing cultural change and policy development within the inherent structures of a setting (Whitelaw et al., 2001, p.346). By acknowledging (i) practice variances in the rigour of application of the settings approach, and (ii) the setting-specific characteristics posited to mediate the feasible scope of HP, the review aimed to achieve greater congruency between theoretical discourse and the realities experienced by HP practitioners (Whitelaw et al., 2001). Indeed, more recent settings-based literature has suggested that ‘passive’ models continue to prevail in certain contexts, whereby behavioural HP interventions are packaged as a ‘settings approach to HP’, despite a relative dearth of foci on broader socio-ecological determinants or policies (Geidne et al., 2019; Kokko et al., 2014; Moynihan et al., 2016).

The evolution and contemporary relevance of the settings-approach to HP was also comprehensively explored by Dooris (2013) in a qualitative study encompassing
interviews with a purposively recruited sample of internationally renowned domain experts. Similarly to the aforementioned seminal work of Whitelaw et al. (2001), marked geographical and contextual variances, in addition to a potential sense of territorialism, were suggested as limiting factors to the consistent implementation and scalability of the approach between settings (Dooris, 2013). Secondly, it was acknowledged that settings-based HP could, in certain contexts, be prudently positioned as a viable approach to address complex contemporary health challenges (such as obesity), in order to maximise cross-sectoral alignment and subsequent integration into policy. Finally, political and inter-agency endorsement was cited as a potent facilitator and, interestingly, the permeation of a settings-based paradigm throughout health-related policies in Ireland was cited as an exemplar in this regard (Dooris, 2013). Notably, the settings-oriented values of the Ottawa Charter have been reflected within the Irish strategic framework for HP (‘Healthy Ireland’), which ultimately aspires to create “a Healthy Ireland, where everyone can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is valued and supported at every level of society and is everyone’s responsibility” (Dept. of Health, 2013, p. 5). The pragmatic enactment of this ‘whole of society’ approach towards enabling health and wellbeing has been more recently set out within the ‘Healthy Ireland Strategic Action Plan 2021-2025’, under the remit of a subdivision of ‘Sláintecare’, a policy that aims to fundamentally restructure the delivery of national health and social services (Healthy Ireland, 2021a). This Strategic Action Plan explicitly maps, and commits, to cross-sectoral and cohesive action to enable health within prominent societal settings, and specifically prioritises the creation of ‘Healthy Campuses’ (see section 2.4.2).
Healthy Settings in Practice

In both Irish and international practice, the implementation of the settings approach to HP has extended to prominent societal settings such as cities (de Leeuw, 2009; WHO, 2015), schools (HSE, n.d.; Moynihan et al., 2016), hospitals/healthcare settings (Johnson & Baum, 2001), prisons (Whitehead, 2006), workplace settings (Chu et al., 2000), sports clubs (Lane et al., 2021), and HEIs (Darker et al., 2021; Dooris et al., 2014; 2019; Newton et al., 2016). Moreover, societal globalisation and digitisation has usurped and extended the traditional conceptualisation of a HP setting to encompass virtual environmental contexts and communications (Dooris, 2013; Stark et al., 2022).

There is a substantial volume of discourse surrounding ‘whole-school’, or ‘health-promoting school’ (HPS) interventions, from which inferences can be derived to guide the implementation of the settings approach within HEIs. Firstly, the progression of the HPS movement has been attributed to cross-agency endorsement of this agenda at EU level (Dooris, 2013; Turunen et al., 2017). Further endorsed by the World Health Organization and the United Nations’ Educational, Scientific and Cultural Organization [UNESCO] (WHO & UNESCO, 2021); a HPS advocates for the infusion of health within a school’s curriculum and ethos, combined with broader community engagement and outreach (Mükoma & Flisher, 2004). International evidence has indicated favourable impacts of HPS interventions on health-related outcomes of secondary school students (Busch et al., 2015; Levin et al., 2012). In Scotland, analysis of data gathered as part of the ‘Health Behaviour in School-aged Children’ (HBSC) study revealed that students attending secondary schools with a HPS programme exhibited significantly more favourable indices of wellbeing, which persisted following adjustment for possible sociodemographic and contextual confounders (Levin et al., 2012).
In a Cochrane systematic review of 67 cluster randomised control trials (RCTs) HPS interventions exhibited health-enhancing effects on Body Mass Index (BMI), physical activity, health-related fitness, fruit and vegetable intake and tobacco smoking (Langford et al., 2015). However, a dearth of evidence precluded commentary on further outcomes such as mental wellbeing or sexual health. Methodological challenges and limitations were noted, and the inherent breadth and flexibility of the HPS approach introduced high heterogeneity into quantitative meta-analyses. Furthermore, the segregation of education and health governance structures was cited as a macro-level societal barrier to the adoption of a systems-based perspective to meaningfully leverage the HPS approach (Langford et al., 2015). In practice, HPS outcomes may be intrinsically related to the ecological rigour of interventions, as evidenced within a mixed-methods, controlled evaluation that was conducted in suburban secondary schools (n=2 intervention, n=2 control) in the Netherlands (Busch et al., 2015). Within one intervention school, students exhibited significantly improved quantitative health outcomes after one year (BMI, internet use patterns and psychosocial wellbeing), and this was attributed to the school’s comprehensive HPS intervention actions which encompassed policy, environment, community engagement, and curricular components (Busch et al., 2015).

In Irish research, quantitative analyses comprised within a mixed method HPS evaluation (n=5 intervention schools, n=2 control, all children aged between 4 and 12 at baseline) revealed no significant between-group (n=467 intervention vs. n=137 control) differences in children’s physical or psychological wellbeing after either one, or two years of follow up (Comiskey et al., 2015). However, HPS implementation in Ireland has been somewhat fragmented and potentially lacking in rigour, as indicated by Moynihan et al. (2016) in a cross-sectional study involving a sample of 394 Social Personal and Health Education
(SPHE) secondary school teachers. Notably, 56% of the sample classified their school as ‘health promoting’, despite an extant paucity of evidence to indicate either whole-school implementation, or macro-level actions to address school policy (Moynihan et al., 2016).

In contrast to the magnitude of scale of the HPS approach, parallel entities such as ‘health promoting hospitals’ have been described as somewhat ‘siloed’ from ‘Healthy Cities’ initiatives, further diluting the impact of Healthy Cities as overarching collaborative conduits for the cohesive geographical progression of healthy settings (Dooris, 2013). Interestingly, as a relatively emergent HP setting in both an Irish (Lane et al., 2017, 2021) and international context (Geidne et al., 2019; Kokko et al., 2014), ‘health promoting sports clubs’ have gathered traction as part of a “new wave of settings work” to expand beyond schools, workplaces, or institutions (Kokko., 2014, p. 60). Given that traditional perceptions of the mandate of sports clubs may not encompass health per-se, it has been proposed that explicit alignment with ‘core business’ and vernacular (Kokko, 2014) constitutes a necessary pre-requisite to the meaningful implementation of the settings approach across all levels of a club’s ecosystem (Kokko et al., 2014).

2.4 HEIs as Uniquely Influential HP Settings

HEIs have been previously described as distinct ‘communities’ that are subject to perceived norms and influenced by cultural, organisational, and built-environment factors (Dooris, 2001; Newton et al., 2016). Furthermore, as complex ‘systems’ (Dooris, 2006), HEIs are uniquely positioned within contemporary society to advocate for health, wellbeing, and sustainable development through knowledge generation, advocacy, and capacity building of students, staff, and broader communities (Okanagan Charter, 2015).
In Ireland, the higher education sector has undergone rapid expansion in recent decades (McCoy & Smyth, 2011), and was purported to generate a cumulative economic output of €10.6 billion in 2010/2011 (Zhang et al., 2017). Extending the calculations of Zhang et al. (2017) to the HEI income data comprised within the most recent Higher Education Authority (HEA) ‘Performance Institutional and System Profiles’ report (HEA, 2022) suggests this collective sectoral economic output further increased to €11.8 billion in 2019/20. In addition, the HEA recently reported a total of 246,299 student enrolments in 2021/22 (HEA, n.d.), and there were 27,557 contracted staff posts within publicly funded HEIs in Ireland during 2019/20 (HEA, 2022). Given their influential position within regional economies, in addition to research-related mandates and ecosystems, HEIs constitute potent and pragmatic HP settings for the purposes of both the delivery and evaluation of multi-level health-related interventions (Darker et al., 2021; Plotnikoff, Collins, et al., 2015).

**Intervention Principles and Practices**

Several analogous terms such as ‘Health Promoting University’ (HPU), ‘Healthy University’ (HU) and ‘Healthy Campus’ have been used to reference the implementation of the settings approach to HP within HEIs (Sarmiento, 2017; Taylor et al., 2019). Given that this involves a ‘whole university’ approach to ecologically enable health and wellbeing (Holt et al., 2015), it is unsurprising that this literature is predominantly theoretical, with a relative dearth of empirical studies documenting the meaningful implementation of a macro-level HU policy, and/or the systematic evaluation of such an approach (Suárez-Reyes & Van den Broucke, 2016). Furthermore, it appears that the pace at which the HU approach has been adopted has not attained the magnitude and
momentum of comparable ‘healthy schools’ or ‘healthy cities’ settings-based initiatives (Newton et al., 2016; Sarmiento, 2017). Dooris et al. (2019) stated that the HU agenda appears to be “navigating its place” (p.247) within a resource-constrained higher education sector that aims to serve the educational needs of diverse student cohorts, whilst concurrently performing a societal advocacy role to progress complex agendas such as the United Nations’ Sustainable Development Goals (Darker et al., 2021; Dooris et al., 2019).

A systematic review of 12 studies reporting on the global implementation of the HU approach and interventions confirmed the well-established vision of a contemporary HU as a HEI that inherently enables health through a whole-system integrative approach, whereby health and wellbeing traverse curricula, policies, and the core values of an institution (Suárez-Reyes & Van den Broucke, 2016). Despite these commonly cited principles in the global literature, the need to ensure that activities are tailored to address culturally specific issues identified amongst HEI populations was also re-enforced. Finally, the review also highlighted limitations and barriers to the implementation and impact of HU interventions, including a failure to translate HP activities into overarching HEI-level policies, and the lack of robust, macro-level evaluations encompassing both health-related population outcomes and performance indicators to measure broader systemic changes to the environment and cultural operations (Suárez-Reyes & Van den Broucke, 2016). Incidentally, demonstrating a tangible ‘cost-benefit’ within the constraints of typically time-limited HEI resourcing models also poses a substantial barrier to adequate investment in the implementation of the HU approach (Dooris et al., 2018). Pragmatically, it appears both ‘top-down’ (meaningful and sustainable organisational change) and ‘bottom up’ (high-visibility, participatory initiatives to engage
campus stakeholders such as students and staff) approaches are essential facets to a ‘whole university’ intervention strategy to positively impact population health and wellbeing (Dooris, 2001; Dooris et al., 2010; Lange et al., 2021).

Further insights into the fundamental prerequisites to the successful implementation of the HU approach were provided by a qualitative instrumental case study that examined the perceptions and applications of the settings-based HU concept and principles within two UK HEIs; an ‘exemplar’ vs. ‘contrary’ case (Newton et al., 2016). Although holistic and positivist definitions of health and wellbeing were exhibited by stakeholders across both HEIs, a ‘whole-system’ viewpoint, and a participatory approach to organisational decision making, were notable values associated with the successful implementation of a HU within the ‘exemplar’ setting. In addition, a more tangible level of ‘commitment’ to the implementation of a HU was reported in the exemplar HEI, evidenced by greater human resource allocation, references to health and wellbeing within core strategic documents, and senior management buy-in (Newton et al., 2016).

In practice, global systematic reviews have posited HEIs as particularly efficacious contexts within which to implement physical activity and nutrition interventions for both students (Plotnikoff, Costigan et al., 2015) and staff (Plotnikoff, Collins et al., 2015). Moreover, pertinent practice insights can be inferred from a recent longitudinal mixed-methods evaluation of the ‘State of Mind Ireland-Higher Education’ (SOMI-HE) intervention (O’Brien et al., 2020a). Embedded within an academic programme, SOMI-HE comprised of two 90 minute workshop sessions, empirically informed by an intervention mapping approach (O’Brien et al., 2020b). The intervention aimed to salutogenically enhance HEI students’ mental wellbeing, resilience, and physical activity.
behaviours. In a sample comprised of 134 students of an Irish HEI (70.9% female, 85.8% postgraduate), ‘pre-post’ quantitative analyses indicated significant improvements in students’ wellbeing and physical activity, which were self-reported on validated measures. As a crucial ecological and systemic insight however, qualitative analyses indicated that the post-intervention ‘signposting’ component of SOMI-HE was not effective, and the authors attributed this to broader societal constraints impacting students’ knowledge of, and access to community mental health supports (O’Brien et al., 2020a). These data appear to substantiate the rationale for broader settings-based paradigms across all phases of an intervention’s lifecycle.

2.4.1 Prominent International HU/HPU Frameworks and Networks

Contemporary settings-based calls to action (such as the Okanagan Charter for Health Promoting Universities and Colleges, and the Irish Healthy Campus Framework, as outlined further below) and international HU or Healthy Campus networks have largely derived from the vision(s) and ideals comprised within a seminal strategic framework for health promoting universities that was published by the WHO in 1998 (Tsouros et al., 1998). This framework document explicitly aligned with the settings approach to HP, the Ottawa Charter, and the broader principles of equity and sustainable development. The framework was, essentially, the outcome of both the ‘First International Conference on Health Promoting Universities’ in addition to a ‘WHO Round-Table’ meeting to progress the strategic development of a ‘European Network of Health Promoting Universities’ (Tsouros, 1998).
A specific Chapter within the broader publication (Tsouros et al., 1998) conceptualised a HPU as a HEI that exhibits the following core components:

- An explicit commitment to “health, sustainability and equity” (p. 128) within all processes and policies, including the HEI’s overarching strategic documentation.
- Health promoting built environments, with a particular consideration given to sustainability.
- Availability of tailored health-related support services to student and staff cohorts.
- A campus population that is enabled to develop pragmatic skills and to engage in habitually healthy choices.
- Partnership from students and staff in operational decision-making, multi-level communication pathways, and broader engagement with local communities.
- Health and wellbeing embedded within academic curricula and research activities.

The framework acknowledged that the above characteristics should be tailored to the context, culture, and specific needs of a HEI. Furthermore, a HPU was not viewed as a static or measurable outcome, rather a continuous process of advocacy and improvement (Tsouros et al., 1998). Although this framework provided a comprehensive rationale for the implementation of a prominent HPU initiative in Ireland (UCC Health Matters, 2012), Dooris et al. (2010) attributed the absence of any tangible follow up actions as a factor that somewhat negated its impact. In addition to the above-referenced seminal HPU output, a series of international ‘Healthy University’ or ‘Healthy Campus’ conceptual frameworks have subsequently emerged to further advocate holistic and ‘whole-system’ approaches to campus HP, as summarised below in Table 2.2.
### Table 2.2 Chronological summary of international HU conceptual frameworks

<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Author(s)</th>
<th>Key Tenets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Edmonton Charter for Health Promoting Universities and Institutions of Higher Education</td>
<td>Output from: 2nd Pan American Conference on Health Promoting Universities</td>
<td>- Re-enforced HEIs as “catalysts for change” (p.1).&lt;br&gt;- Health Promoting Universities (HPUs) accept “organisational responsibility and accountability for the health and wellbeing of students and staff” (p.2).</td>
</tr>
<tr>
<td>2010</td>
<td>Healthy Universities’ Conceptual Framework for HEIs in England</td>
<td>Dooris et al. (2010)</td>
<td>- A Healthy University (HU) “aspires to create a learning environment and organisational culture that enhances the health, wellbeing and sustainability of its community, and enables people to achieve their full potential” (p.5).&lt;br&gt;- ‘Whole-system’ approach to (i) create a healthy, sustainable HEI environment, (ii) embed health and sustainability within all research and academic activities, and (iii) contribute to the health and sustainable development of broader communities.&lt;br&gt;- Described both sectoral (student engagement and retention, organisational productivity) and societal HU ‘drivers’ (NCDs, risk-related behaviours, health inequalities, climate change)</td>
</tr>
<tr>
<td>2015</td>
<td>Okanagan Charter for Health Promoting Universities and Colleges</td>
<td>Output from: 2015 International Conference on Health Promoting Universities and Colleges</td>
<td>- Global call to action for HEIs to (i) lead HP action, and (ii) integrate health and wellbeing into all facets of their organisational cultures, processes, and academic activities.&lt;br&gt;- Continues to serve as an international guidance document, and has underpinned HP strategies within prominent Irish HEIs</td>
</tr>
<tr>
<td>2020</td>
<td>American College Health Association (ACHA) Healthy Campus Framework</td>
<td>American College Health Association</td>
<td>- Broad-based ‘roadmap’ for HEIs to regularly self-evaluate their position(s) and progress towards embodying the values of a ‘Culture Campus’&lt;br&gt;- ‘Culture Campus’: HEI that explicitly and visibly commits to fostering a health promoting culture to maximise the health and wellbeing of all strata of its population and community.</td>
</tr>
</tbody>
</table>
As outlined in Table 2.2, the ‘Okanagan Charter for Health Promoting Universities and Colleges’ was a disseminated output from the 2015 International Conference on Health Promoting Universities and Colleges in Kelowna, British Columbia, Canada (Okanagan Charter, 2015). The Charter was conceptualised and designed by a diverse contingent of higher education stakeholders (academics, administrators, policy makers) from 42 countries via a multi-phase drafting process that encompassed expert interviews, review of previous Charters, and completion of a survey instrument by delegates prior to the conference to derive an initial draft document. This draft was then further refined by delegates during designated sessions at the conference who committed to utilising the Charter within their host HEIs to inspire further action (Black & Stanton, 2016).

In essence the Okanagan Charter re-emphasised the unique position of the higher education sector in the promotion of health and wellbeing, and called directly on international HEIs to assume leadership roles to drive collaborative HP action, and to integrate a consideration for health and wellbeing into all facets of their organisational cultures, processes, and academic activities. Since its dissemination, it has served as a guidance document to steer HP actions within global HEIs, and has been explicitly referenced within literature from New Zealand (Tonks et al., 2017; Waterworth & Thorpe, 2017), the USA (Sarmiento, 2017), and Australia (Taylor et al., 2019). The Charter has also been referenced within HP strategies published by prominent Irish HEIs (Darker et al., 2021; Dublin City University [DCU], 2018; University College Dublin [UCD], 2016).

In practice, global ‘Healthy University’ and/or ‘Health Promoting University’ networks have also emerged, with a shared collective purpose of advocating for, and progressing, the HU/HPU agenda and the principles of the Okanagan Charter. As an overarching
global network that was purposively established to advocate for, and facilitate, the international enactment of the Okanagan Charter, the International Health Promoting Universities and Colleges (IHPU&C) Network is further constituted by Regional Geographical Networks across Australasia (Australia, New Zealand), South-East Asia, South America (Chile, Columbia, ‘Iberoamerica’, Mexico), North America (USA, Canada), and Europe (Spain, Germany, United Kingdom) (IHPU&C, n.d.).

**UK Healthy Universities’ Network (UKHUN)**

The UK Healthy Universities’ Network (UKHUN) is a co-initiative of Manchester Metropolitan University and University of Central Lancashire (Healthy Universities, 2022a). Comprised of members from UK HEIs, as well as Associate members from International HEIs and non-HEI bodies, UKHUN’s overarching objective is to establish a collaborative network of Institutions who are committed to embedding a consideration for health, wellbeing, and sustainability within all aspects of their operations and cultures (Healthy Universities, 2022a). UKHUN operates a website, facilitates a collaborative community of practice (communications via email facilitated by the Network’s administrator), publishes a biannual newsletter, and also holds Biannual Network Meetings at alternating locations within the United Kingdom.

Barriers and facilitators of the UKHUN have been identified by members in recent research (Dooris et al., 2019). In this regard, members valued the Network’s meetings, culture of collaboration, web-based resources, and leadership. The fundamental barrier related to members’ perceived limited capacity for participation due to heavy workloads and conflicting commitments. Although recommendations for the future development of
UKHUN were proposed, it was acknowledged that the general scalability of UKHUN is restricted heavily by funding constraints (Dooris et al., 2019).

Of particular note, UKHUN endorses a ‘whole-HEI’, non-prescriptive and confidential HEI self-assessment (Dooris et al., 2018). This ‘toolkit’ comprises of a series of statements relating to five thematic areas: (i) ‘Leadership and Governance’, (ii) ‘Service Provision’, (iii) ‘Facilities and Environment’, (iv) ‘Communication, Information and Marketing’, and (v) ‘Academic, Personal, Social and Professional Development’ (Healthy Universities, n.d.). Each statement is rated on an ordinal scale to indicate the HEI’s relative position (‘No not at all, Don’t know, Thinking about it, Working on this currently, Yes we are there’). The review can be completed confidentially online, and has been positively received by UKHUN members as a mechanism of providing structure, in addition to an impetus to attain Senior Management buy-in to the ‘whole system’ participatory ethos of the HU (Dooris et al., 2018). Notably, the toolkit was also specifically referenced within the HU strategy (‘Healthy UCD’) of University College Dublin (UCD, 2016).

2.4.2 Irish Healthy Campus Framework and Charter

In Ireland, a ‘Healthy Campus’ Framework and Charter (Healthy Ireland, 2021b) have been co-created through a consultative process involving HEI stakeholders, the Health Service Executive (HSE), and representatives from Healthy Ireland (which is the Irish Government’s national HP strategic body). This Framework was publicly launched in 2021 in a notable press release that explicitly allocated the oversight of its national adoption to the Irish Higher Education Authority (HEA) (Dept. of Health, 2021). The
national roll-out has comprised of HEI seed funding, in addition to the appointment of a National Healthy Campus Co-Ordinator (three-year term), whose role is to constitute a national liaison for the purposes of overseeing the implementation of the Framework (Dept. of Health, 2021).

The Framework specifically draws upon both the Okanagan Charter and the settings approach to HP. Its fundamental principles are (i) ‘participation’, (ii) ‘partnership’, (iii) that all actions will be ‘evidence based’ and (iv) ‘sustainability’ of organisational change (Healthy Ireland, 2021b, p. 3). The Framework recommends a ‘whole-campus’ approach, centred around four fundamental thematic action areas:

1. Leadership, Strategy and Governance
2. Campus Environment (Facilities and Services)
3. Campus Culture and Communications
4. Personal and Professional Development

(Healthy Ireland, 2021b, p. 3)

Echoing Tsouros’ 1998 conceptualisation of a HPU as a process rather than a destination, the implementation phases of the Irish Healthy Campus Framework have been conceptualised to form a cyclical visual structure (Figure 2.2). This structure highlights the importance of beginning with an overarching organisational commitment (signing of the Charter by the HEI’s President and/or equivalent) to enact the principles of the Charter and Framework, and thereafter continued actions to (i) engage both a Co-Ordinator and a representative HEI Steering Oversight Group of the Healthy Campus initiative (‘Co-Ordinate’), (ii) engage in consultative needs assessments to prioritise actions (‘Consult’), (iii) develop streamlined and cohesive strategies to deliver on identified actions/priorities
(‘Create’), and (iv) evaluate, disseminate and use experiences and learnings to inform the next cyclical phase (‘Celebrate and Continue’) (Healthy Ireland, 2021b, p. 4).

![Diagram showing the fundamental processes of the Irish Healthy Campus Framework](Image)

**Figure 2.2** Fundamental processes of the Irish Healthy Campus Framework (Healthy Ireland, 2021b)

### 2.4.3 Current HP Practice within Irish HEIs

In Ireland, a ‘Healthy Campus’ Network was established in 2018, under the remit of the ‘Healthy Ireland’ strategic framework. Comprised of HEI representatives and allied stakeholders (HEI Students Unions, HSE representatives, Healthy Ireland stakeholders), this Network has constituted a community of practice within the domain of campus HP (see Appendix J). The fundamental output of this Healthy Campus Network to date has been the collective co-creation of the above mentioned ‘Healthy Campus Charter and Framework’.
As a recent empirical contribution to campus HP in Irish context, Darker et al. (2021) outlined the development and ongoing implementation of ‘Healthy Trinity’, which is a settings-based HP initiative in Trinity College Dublin (University of Dublin). The critical importance of aligned research activity was noted, in addition to the requirement for a mechanism of identifying, and mapping, the inter-related cross-university outcomes of efforts to embed health within the university’s operations (Darker et al., 2021). Whilst the strengths of ‘Healthy Trinity’ were described, including a collaborative operational and academic co-leadership structure underpinning its governance and aligned thematic working groups, several extant barriers to embedding the initiative across the university were experienced such as:

i. Structural segregation (students vs. staff), yet frequent duplication, of health and welfare services and initiatives offered to the campus community

ii. Funding constraints, time constraints, and the lack of a direct reporting pathway through which to disseminate the value and impact of ‘Healthy Trinity’ to the university’s Board

iii. Competing agendas, and inconsistent workload allocation policies, which constituted a barrier to staff participation on working groups

(Darker et al., 2021)

Apart from the work of Darker et al. (2021), there appears to be a relative paucity of peer-reviewed literature offering a broad overview of the implementation of HU/Healthy Campus initiatives within Irish HEIs, which substantially limits campus HP practice. However, there have been initiatives reported within institutional strategic frameworks and associated grey literature.
Under the stewardship of, and governed by, a bespoke framework developed by the HP division of the HSE South, University College Cork (UCC) was the first HEI in Ireland to attain formal recognition as a ‘Health-Promoting University’ in 2015, through the implementation of its designated HP entity, ‘UCC Health Matters’ (UCC Health Matters, 2012). Interestingly, this accreditation was on the basis of a bespoke evaluation that drew guidance directly from the above-referenced 1998 Health Promoting University WHO framework (Tsouros et al., 1998), but preceded the government-mandated Healthy Campus framework that has subsequently been rolled out at a national level in Ireland.

Several other Irish HEIs have also published specific HP strategic documents and/or designated HU/Healthy Campus frameworks. Firstly, given its occurrence prior to the COVID-19 pandemic, it is pertinent to note that UCD explicitly included health (‘Building a Healthy World’) as one of four thematic strategic priorities within its most recent strategic plan (UCD, 2019). In addition, their designated HP strategy was published in 2016 as the HEI’s explicit response and contribution to enabling health and wellbeing across the lifespan, as committed to by the Government’s broader Healthy Ireland Strategic Framework (UCD, 2016).

This ‘Healthy UCD’ strategy described Executive Level (Deputy President) commitment to the formation of an initial HP Working Group, which subsequently conducted an internal audit of activities. Interestingly, this audit identified a plethora of activity, but a concurrent lack of cohesion and overarching governance of same (UCD, 2016). A further exploratory workshop to identify student and staff needs (N=150, both students and staff), was then used to inform a subsequent comprehensive gap analysis to inform the design of an overarching and cross-university HP strategy (UCD, 2016). This strategy, presented
in Figure 2.3, set out a distinct vision where “*UCD is recognised as a global health promoting university*” (UCD, 2016, p. 14) that adopts a collaborative and community embedded approach towards enabling health and wellbeing across all strata of the HEI. A series of short-, medium- and long-term objectives were outlined, in addition to essential activities such as (i) securing funding and sufficient resourcing, (ii) building visibility and ‘buy-in’, (iii) reviewing all of the HEI’s policies from the paradigm of health and wellbeing, and (iv) implementing a dedicated and aligned research programme under the leadership of a designated human resource (UCD, 2016). Finally, explicit ‘Key Performance Indicators’, through which to measure the impact of ‘Healthy UCD’, were identified and included (i) staff absenteeism, (ii) student retention, (iii) an evaluation of student engagement with welfare supports and campus physical activity facilities, and (iv) use of the above-mentioned UKHUN self-assessment toolkit as a benchmarking exercise (see section 2.4.1).

Figure 2.3 ‘Healthy UCD’ strategic schematic representation (UCD, 2016)
Similarly, the University of Limerick (UL) published a designated ‘Healthy UL’ Framework in 2019 (UL, 2019). The antecedent to this framework was an initial Executive Management endorsement of a designated Healthy Campus strategy in 2017, which aimed to ensure that the university explicitly aligned with the broader Healthy Ireland strategy (UL, 2019). The overarching concept, vision and target thematic areas for UL were developed following a stakeholders’ workshop session in 2018, which was inclusive of representation from the Dept. of Health.

Working group leads, and sub-structures, were developed for each of the thematic areas, and baseline needs analysis activities were conducted, such as a gap analysis, policy and activities’ review, and dissemination of a questionnaire instrument to a sample of 276 students and 503 staff (UL, 2019). These baseline activities served to conceptualise and derive the final Healthy UL model, as presented in Figure 2.4.

![Figure 2.4 ‘Healthy UL’ structure and identified action areas (UL, 2019)]
The model is comprised of three inter-related, concentrically depicted concepts, and sub-domains; (i) ‘Healthy UL’ (which refers to culture, communications, and resources within the HEI), (ii) ‘Healthy Systems’ (operational governance and structures to sustain Healthy UL, including aligned research activities), and (iii) ‘Healthy People and Environments’ (cross-HEI working groups to address prioritised thematic domains) (UL, 2019).

In 2021, Waterford Institute of Technology, which was reconstituted into the South East Technological University (SETU) on May 1st 2022, attained the International University Sports Federation’s (FISU) Healthy Campus accreditation (South East Technological University [SETU], 2021), which is a bespoke, 2-year accredited labelling system (FISU, n.d.). This Healthy Campus accreditation process commences with registration on a web-based platform, after which a HEI self-assessment is completed within 9 months (FISU, n.d.). Following initial feedback, the HEI resubmits a revised assessment, and will receive an initial accredited FISU label 12 months post-initial registration. During Year 2, the HEI is subject to an external audit, and receives an evaluation report (FISU, n.d.) Accreditation benchmarking criteria (ranging from bronze, silver, gold or platinum) encompass governance of the HEI’s Healthy Campus initiative, physical activity/sport, nutrition, specific disease-prevention programmes, mental and social wellbeing, activities to address students’ risk related behaviours, and environmental responsibility (FISU, 2020).

2.5 Health and Wellbeing of HEI Campus Populations

As outlined in section 2.3.1 above, adopting an evidence-based, cross-sectoral, and settings-based approach to maximise the health and wellbeing of all strata of the
population constitutes the central tenet of the Irish government’s ‘Healthy Ireland’ HP Framework (Dept. of Health, 2013). As prominent settings within the context of this framework, and its most recent Strategic Action Plan (Healthy Ireland, 2021a), the rationale for campus HP activities that are informed by, and evaluated on the basis of designated empirical research has been explicitly outlined within the campus HP strategies of several Irish HEIs (Darker et al., 2021; UCD, 2016; UL, 2019). From an ecological perspective, it is likely that the health and wellbeing of campus populations are mediated by a combination of environmental and individual determinants (Dooris, 2006). However, as a contextual overview of the predominant health-related parameters and domains that could serve as potential outcome measures and/or thematic foci within the context of broader settings-aligned HU strategies, this section of the review aims to summarise the body of literature pertaining to the health and wellbeing of both HEI student (section 2.5.4) and staff (section 2.5.5) cohorts.

2.5.1 Higher Education Students (HEI Students)

Higher education has been consistently described as a coming-of-age, ‘transitional’ life stage for many young adults (Al-Nakeeb et al., 2015; Gambles et al., 2022; Hill et al., 2020; Holt & Powell, 2017; Murphy et al., 2015). Although the student landscape is diversifying, this quintessential transition to higher education results in sudden changes to students’ social support networks within a newly-autonomous environment (Von Ah et al., 2004). Worryingly, the ‘cost of living’ for a quintessential undergraduate student in Dublin has been approximated at between €1,405 and €2,565 per month, largely attributable to substantial accommodation costs (UCD, n.d.). Concurrently, the European Credit Transfer and Accumulation System (ECTS) that predominates across the EU
Higher Education Area (Gleeson et al., 2021) extrapolates to an approximate workload of between 40-50 hours per week during a 30-credit semester (TCD, 2019). Therefore, although exciting (Galambos et al., 2009; Von Ah et al., 2004), for many the ‘college’ years represent a period of financial scarcity coupled with academic demands (Deasy et al., 2014; El Ansari, Stock, Snelgrove, et al., 2011), during which risk-taking behaviours are a prevalent norm (El Ansari, Stock, John, et al., 2011).

HEI students constitute a sizeable target population for the purposes of HP research (Irazusta et al., 2007; Varela-Mato et al., 2012), and it has been proposed that higher education represents a cost-effective life-stage during which to implement health education programmes (Wang et al., 2009). Pragmatically, modifiable behavioural risk factors established during the formative higher education period may persist to negatively impact future health (Dodd et al., 2010). Therefore, international research pertaining to the health lifestyles of HEI student cohorts is of multi-sectoral interest in the context of investigating and ameliorating NCD risk factors. Moreover, there is a distinct public health and socio-economic rationale for early detection and prevention of mental ill health amongst young adults (Eisenberg et al., 2009; Sivertsen et al., 2019). In Ireland, the cumulative economic costs of mental ill-health have been purported to amount to €11 billion (Mental Health Reform, 2018), and young adults account for the greatest proportion (31.7%) of same (Clayton & Illback, 2013). From a more positivist preventative paradigm, the need to complement the provision of acute mental health services with empirically informed, and demographically tailored, resilience building strategies has been recently noted by Mahon et al. (2022), in cross sectional Irish research that analysed data from 9,935 HEI student participants in the ‘My World-2’ survey. Finally, as the most advanced stratum of a formal education system, societal advocates,
educators, and senior decision makers of the future are likely to emerge from current HEI student cohorts, further substantiating the rationale for interventions to enhance health literacy and enable health-promoting behaviours (Darker et al., 2021; Dodd et al., 2010; El Ansari, Stock, Snelgrove, et al., 2011).

2.5.2 Seminal Irish Research Investigating the Health and Wellbeing of HEI students

In an Irish context, there has never been a solely designated longitudinal programme of research to monitor trends in health outcomes, lifestyle behaviours and risk metrics of higher education students, analogous to the annual waves of data collection that are implemented amongst the ‘general’ population under the remit of ‘Healthy Ireland’. Nonetheless, a series of distinct, seminal research outputs have served to guide and inform discourse within the domain of campus HP.

The College Lifestyle and Attitudinal National (CLAN) Survey (Hope et al., 2005)

The College Lifestyle and Attitudinal National (CLAN) survey was a national cross-sectional study designed to investigate the health and lifestyle behaviours of undergraduate HEI students in Ireland (Hope et al., 2005). This study was conceptualised as a concurrent element to the implementation of the ‘Framework Document for Developing a College Alcohol Policy’, whereby a National Working Group on Alcohol in Higher Education were cognisant of the ‘Health Promoting College’ framework, and the need to both holistically, yet empirically, inform same (Hope et al., 2005). The study was implemented centrally within the HP Unit of the (former) Department of Health and Children, further supported by the (former) Department of Education and Science, Higher
Education Authority, a Consultation Group on Health Promoting Colleges, in addition to individual HEI representatives. Data were collected from 3,259 full-time undergraduate students during the 2002/2003 academic year, using an incentivised, paper-based questionnaire instrument that was disseminated by post to randomised, proportional samples within 21 HEIs across Ireland (Hope et al., 2005). This instrument investigated key domains of interest, such as socio-demographics, general health perceptions, mental health, dietary behaviours, physical activity, alcohol consumption, sexual health, and illicit substance use.

CLAN highlighted an overarching pattern of sub-optimal and risk-related behaviours, poor psychological coping strategies, and a plethora of adverse consequences associated with harmful alcohol consumption amongst undergraduate students in Ireland. Demographically, it was evident that gender-specific patterns of behaviour were exhibited by the cohort, in addition to variances in metrics and behaviours by year group.

A suite of recommended actions included explicit calls to:

i. Establish a national Health Promoting College Network to further the implementation of the settings-approach to HP within HEIs

ii. Prioritise mental health, alcohol-related harms and sexual health in future HP actions

iii. Stratify all local and/or national HP data by gender, to inform tailored and targeted interventions

iv. Establish a designated longitudinal programme of research to facilitate rigorous monitoring of HEI students’ health and wellbeing metrics, and to robustly evaluate health-related initiatives
v. Partner with HEI clubs and societies to alleviate risk-related alcohol consumption, and to promote positive wellbeing

(Hope et al., 2005)

Although more recent cross-sectional studies have been implemented in Ireland (Davoren et al., 2015; Mac Neela et al., 2012), the designated programme of cohesive research recommended within the CLAN report was never implemented, and there remains a paucity of nationally representative longitudinal data documenting chronological trends in the health metrics and lifestyle behaviours of undergraduate students. Furthermore, given the substantial diversification in HEI student profiles, programme offerings, and pedagogical approaches within the Irish higher education sector in the period since the CLAN study was conducted (Gibney et al., 2011), there is a pressing need for empirical data pertaining to under-researched sub-cohorts such as postgraduate students, non-standard entrants, part-time students, and specialised cohorts such as distance learners.

More Recent Irish Research

Drawing guidance from CLAN, the ‘Student Lifestyle Survey’ (SLS), was a cross-sectional study implemented within a single HEI in Ireland (NUIG) that gathered data from 841 full time undergraduate students using an incentivised, web-based health and lifestyle questionnaire instrument. The purpose of the SLS was to build upon data generated from CLAN, and to conduct a HEI-specific analysis of (i) student engagement and (ii) student mental health. From a methodological perspective however, the targeted response rate of 30% was not attained, and given its restriction to undergraduates within
a single HEI, findings are not generalisable to other HEI student populations (Mac Neela et al., 2012).

A further ‘single-HEI’, yet notable, contribution to the literature was constituted by the work of Davoren and colleagues in UCC. This research encompassed a proportional probabilistic sample of 2,332 undergraduate students, who completed an incentivised, paper-based multi-domain health and lifestyle questionnaire instrument during lectures in March 2012 (Davoren et al., 2013). Research outputs have included investigations into the determinants of hazardous alcohol consumption (Davoren et al., 2015) and mental wellbeing (Davoren et al., 2013).

At a national level, although its primary purpose was to investigate the determinants of sport and physical activity participation within the higher education sector, the ‘Student Activity and Sports Study Ireland’ (SASSI) was a multi-setting (N=33 HEIs) mixed methods study that encompassed an assessment of health-related behaviours (self-reported) and physiological health parameters (objective) of HEI students (Murphy et al., 2015). Self-reported data were gathered using a 98-item web-based questionnaire instrument that included items on student demographics, habitual physical activity behaviours (both sporting and recreational), alcohol consumption, diet, tobacco smoking, illicit drugs, sitting time, self-perceived body habitus, general health, and mental health (Murphy, Woods, et al., 2019). The sample comprised of 8,122 students from 31 HEIs in Ireland (2 HEIs did not participate in this phase), and data were weighted by sex and age (Murphy et al., 2015). The final phase of the study also gathered objective health-related physiological data (BMI, waist circumference, blood pressure, cardio-respiratory capacity and objective assessment of 7-day physical activity patterns using
accelerometers) from a sample of 463 full-time students (88.9% undergraduate, 11.1% postgraduate) from 5 HEIs (Dublin City University, University of Limerick, University of Ulster, the former Waterford Institute of Technology, and the former Institute of Technology Carlow) (Murphy et al., 2015).

Finally, the most recent national and government-endorsed research pertaining to HEI students was the ‘Drug Use in Higher Education in Ireland’ (DUHEI) survey (Byrne et al., 2022). Although rooted firmly within the paradigm of determinants of illicit drug use, DUHEI also gathered data pertaining to students’ (i) mental wellbeing, (ii) perceptions of social norms surrounding illicit drug use, (iii) engagement with activities within their HEI, and (iv) alcohol recovery (Byrne et al., 2022).

2.5.3 Prominent International Health Profile Studies Amongst HEI Student Cohorts

In an international context, research to investigate the health and lifestyle parameters of HEI students has comprised of studies implemented by international consortia (El Ansari et al., 2007; Haase et al., 2004; Steptoe et al., 2002), designated national programmes (Kunttu et al., 2017; Sivertsen et al., 2019), single country and/or HEI-specific peer-reviewed outputs (Bennasar-Veny et al., 2020; Evans et al., 2021; Whatnall et al., 2020), in addition to grey literature reporting on local level needs assessments or designated research to inform specific HU initiatives (Deniozou, 2015; Holt & Powell, 2017).

National research strategies have been implemented in Scandinavian countries, such as the ‘Finnish Student Health Survey’ (Kunttu et al., 2017) and the ‘SHoT’ study in Norway (Sivertsen et al., 2019), both of which constitute multi-domain, questionnaire-based
studies that have gathered data on a 4-year cyclical basis. In North America, the American College Health Association (ACHA) has overseen biannual (semesterised) waves of data collection from HEI students using the multi-domain ‘National College Health Assessment’ (NCHA) instrument since 2000 (ACHA-NCHA, 2021a). Over the past two decades, the NCHA has progressed through a series of iterations reflecting societal and cultural changes, and the current version (NCHA III) is entirely web-based (ACHA-NCHA, 2021b). However, in contrast to the Scandinavian studies outlined above, ACHA-NCHA operates via a fee-based, quasi-outsourcing model whereby HEIs elect to outsource aspects of the survey’s logistical implementation, and are later provided with a bespoke data file, overview descriptive analyses (stratified by gender), and summary report of key findings specific to their Institution (ACHA-NCHA, 2021c). Biannual ACHA-NCHA publications report on the cumulative health and lifestyle metrics of the pooled sample of students across all participating HEIs (ACHA-NCHA, 2021a).

2.5.4 Pertinent Methodological Approaches and Study Designs

In terms of Irish and international research exploring health-related domains and behaviours amongst HEI student cohorts, there is a substantial body of questionnaire-based, cross-sectional and/or repeat cross-sectional research, largely reliant on self-report data. Questionnaire instruments comprised of both newly devised and previously validated items or scales are commonplace within the literature. In this regard, prominent measures have included:
i. The Alcohol Use Disorders Identification Test (alcohol consumption) and/or subscales of same (Davoren et al., 2015; Sivertsen et al., 2019; Whatnall et al., 2020)

ii. Tailored physical activity (PA) items (frequency, intensity, volume) from which to infer habitual volume and/or adherence to population guidelines (Al-Nakeeb et al., 2015; Keller et al., 2008; Velten et al., 2018).

iii. Validated PA measures such as the International Physical Activity Questionnaire (Murphy, MacDonncha, et al., 2019; Davoren et al., 2013; Varela-Mato et al., 2012).

iv. Single-item Likert measures of general health status (El Ansari, Oskrochi, et al., 2014; Hope et al., 2005; Lange et al., 2021)

v. Self-reported height and body mass to calculate Body Mass Index (Perusse-Lachance et al., 2010; Piqueras et al., 2011; Velten et al., 2018; Whatnall et al., 2020)

vi. Fruit and vegetable intake as a quantifiable surrogate indicator of dietary quality (Dodd et al., 2010; Keller et al., 2008)

vii. Mental health and wellbeing item(s) or scales, such as the Mental Health Index-5 (Murphy et al., 2018) and the Warwick Edinburgh Mental Wellbeing Scale (Byrne et al., 2022; Davoren et al., 2013).

viii. Of note, some studies collectively quantified overall lifestyle domains using a purposive profiling instrument, the Health Promoting Lifestyle Profile II (Almutairi et al., 2018; Ay et al., 2012; Mak et al., 2018; Mašina et al., 2017; Mehri et al., 2016; Wei et al., 2012). However, a substantial proportion of these studies were conducted in Asia and South America, and therefore geographical
and cultural differences in habitual health and lifestyle practices may reduce the validity of any quantitative comparisons with Irish research.

As a notable methodological exception to the vast body of cross-sectional research, Lange et al. (2021) recently disseminated a protocol for a longitudinal cohort study that will be implemented amongst students within the IST University of Applied Sciences in Germany (‘Healthy Habits’), whereby the pragmatic importance of the HEIs as preventative health settings was specifically acknowledged. Aligned with the ethos of the German ‘Health Promoting University’ (HPU) framework, ‘Healthy Habits’ commenced in winter 2020/2021, and was designed to gather data from students on a semesterised basis using a health-related questionnaire instrument embedded within a technological application (i.e., App.). Health related behaviours encompassed within the questionnaire include drug and tobacco use, alcohol consumption, dietary behaviours, and PA (Lange et al., 2021).

In terms of participant recruitment, wholly convenience sampling has been reported (Deasy et al., 2014; Dodd et al., 2010; Ramírez-Vélez et al., 2015), in addition to either quasi-stratified and/or more purposive and probabilistic approaches (Byrne et al., 2022; Davoren et al., 2015). Notably, some studies explicitly aligned with the Okanagan Charter and their respective HEI’s ‘Healthy University’ HU activities, and in keeping with a ‘whole-university’ ethos, endeavoured to invite all students to participate (Holt & Powell, 2017; Whatnall et al., 2020). Many studies have also been incentivised to encourage participation (Kunttu et al., 2017; Varela-Mato et al., 2012).
From an analytical perspective, descriptive statistics have tended to be stratified by sex or gender, in addition to further socio-demographic characteristics such as age, year group, socio-economic status and term-time residence (family home vs. campus) as a context-specific indicator of relative autonomy over lifestyle-related behaviours. Depending on the overarching context and objective, many studies have trended towards rooting their analyses in identifying determinants and/or predictors of purposively selected health risks or outcomes including hazardous alcohol consumption (Davoren et al., 2015; Hope et al., 2005), PA (Murphy et al., 2015), overweight/obesity (Perusse-Lachance et al., 2010), nutritional behaviours (Bennasar-Veny et al., 2020), stress and/or mental wellbeing (Deasy et al., 2014; El Ansari, Stock, Snelgrove, et al., 2011; El Ansari, Oskrochi, et al., 2014), illicit substance use (Byrne et al., 2022), or academic performance (El Ansari et al., 2010). Notably, whilst enactment of a settings-based ethos within ‘health-promoting’ HEIs was a key recommendation arising from the CLAN study, analyses remained largely focussed on alcohol behaviours and outcomes, given the study’s evolution from efforts to deliver upon an alcohol policy framework within HEIs (Hope et al., 2005). Given that health-related behaviours are known to cluster together (either optimally or sub-optimally), cluster analytical techniques have been employed to identify significant sub-groups of students (‘healthy’ and/or ‘unhealthy’, for example) on the basis of a collection of predefined health and lifestyle variables (Bennasar-Veny et al., 2020; Murphy, MacDonncha, et al., 2019).

Overall, there is an abundance of research reporting multiple health and lifestyle variables amongst HEI student cohorts, of varying breadth and methodological quality. In terms of generalisability of findings, response rate(s) and representativeness of samples have varied. As a consistent limitation, it is notable that samples have comprised of a relative
over-representation of females (Kunttu et al., 2017; Mac Neela et al., 2012; Sivertsen et al., 2019; Whatnall et al., 2020). Nonetheless, considering that these data pertain primarily to highly educated cohorts of young adults at a formative life stage within a microcosmic and hugely influential HP setting (i.e., the HEI), the relative volume of literature confirming that risk-related health and lifestyle parameters appear to be embedded within the higher education experience should constitute a cross-sectoral cause for concern. Such parameters should be monitored and empirically mapped, ideally through designated programmes of research cognisant of setting-specific cultural constructs that can impact upon collective campus populations (El Ansari, Stock, John, et al., 2011).

2.5.5 HEI Students’ Health and Wellbeing: Studies by Individual Domain

Alcohol Consumption

From a public health perspective, harmful use of alcohol is a causative factor in a myriad of adverse health outcomes including cancers, cardiovascular diseases, cognitive disorders, injuries, self-harm, violence, and increased susceptibility to infectious diseases (WHO, 2018b). In 2016, 10.1% of all deaths in the WHO European Region were attributable to alcohol (WHO, 2018b). Particularly harmful drinking typologies such as ‘heavy episodic drinking’ (consumption of 60g of alcohol during at least one episode of drinking a month) were observed among young adults in this regard; 58.4% of those aged 20-24 and 43.8% of those aged 15-19 years (WHO, 2018b).

The normative culture of drinking at university has been well substantiated in the literature (Gambles et al., 2022; Wicki et al., 2010), and such social norms may even
become embedded within the psyche of prospective students prior to commencing their studies (Gambles et al., 2022). It appears social norms are further complicated by extant misperceptions, whereby substantial proportions of HEI students overestimate the actual habitual alcohol consumption of their peers (Andersson et al., 2009; Carey et al., 2006; Park et al., 2011).

Harmful drinking patterns have been widely documented amongst HEI student populations in Ireland (Davoren et al., 2015; Mac Neela et al., 2012), the United Kingdom (Bewick et al., 2008; El Ansari et al., 2013; Heather et al., 2011), Belgium (Lannoy et al., 2017), Australia (Hallett et al., 2012), New Zealand (Connor et al., 2010; Kypri et al., 2002), North America (Zakletskaia et al., 2010), and South Africa (Maphis & Young, 2018). A comprehensive review of 65 studies involving HEI students across Europe reported several determinants of risk-related alcohol consumption including (i) not residing in the family home, (ii) drinking to enhance socialisation and/or to seek pleasure, and (iii) misperceptions of social norms to overestimate peers’ drinking (Wicki et al., 2010). With the exception of some Nordic countries and the UK, male students tended to exhibit more harmful patterns of drinking than their female counterparts, exhibiting greater frequency, volume and more frequent ‘risky single episodes of drinking’ (RSOD) (Wicki et al., 2010).

In an Irish context, it appears the gender differences in drinking behaviours revealed within the CLAN study, whereby male students reported more frequent binge drinking behaviours (Hope et al., 2005), may have reversed. This has been evidenced by a more recent cross-sectional study involving 2,275 undergraduate students of a prominent Irish HEI, whereby 65.2% of males and 67.3% of females were classified as hazardous drinkers.
(Davoren et al., 2015). Worryingly, 57.4% of female participants in that study also reached the higher male thresholds for hazardous alcohol consumption on the validated instrument used (Alcohol Use Disorders Identification Test [AUDIT]).

Notwithstanding the detrimental health effects, from a holistic lifestyle perspective, hazardous drinking among HEI students also appears to be associated with further risky behaviours such as smoking, illicit drug use, and having a greater number of sexual partners (Davoren et al., 2015; Hingson et al., 2009; Hope et al., 2005). Furthermore, in the aforementioned CLAN study, a greater proportion of undergraduates who engaged in binge drinking also employed maladaptive coping mechanisms such as drug taking or excess drinking for anxiety and depression (Hope et al., 2005).

Physical Activity (PA)

Physical activity (PA) is defined as “any bodily movement produced by skeletal muscles that requires energy expenditure” (Bull et al., 2020, p. 1452). Total PA is constituted by accumulated activity across several domains; sport/leisure, occupational, transport and household-related activities (Bull et al., 2020). Irish National Physical Activity Guidelines recommend a minimum weekly volume of 150 minutes moderate to vigorous intensity PA (MVPA) for adults aged 18-64, in addition to muscular strength and endurance activities on at least 2-3 days each week (Dept. of Health and Children & HSE, 2009; Healthy Ireland & Dept. of TTAS, 2016).

Health-related benefits of PA have been re-enforced in recent research (Powell et al., 2018; Raza et al., 2020; Reiner et al., 2013), including a systematic review of longitudinal
studies (≥ five year follow up, n ≥ 500 healthy adults) that concluded PA reduced the risk of, or exerted a protective ‘long term’ effect against, obesity, diabetes, coronary heart disease, dementia, and Alzheimer’s disease (Reiner et al., 2013). From a mental health perspective, PA has also been reported to improve wellbeing amongst both general populations (Warburton et al., 2006) and HEI student cohorts (Brennan, 2022; Molina-García et al., 2011). In the SASSI, HEI students deemed to have met PA guidelines were significantly more likely to report either ‘good/very good’ overall health, greater feelings of happiness, and more positive mental health scores on a validated mental health instrument relative to participants who were classified as ‘inactive’ (Murphy et al., 2018). In international literature involving HEI student cohorts, undertaking sufficient PA has also been associated with positivist and health-promoting lifestyle characteristics, such as greater perceived happiness (Piqueras et al., 2011), lower psychological stress (Dodd et al., 2010), more positive mental health (Grasdalsmoen et al., 2020; Velten et al., 2018), a lower prevalence of tobacco smoking (Moreno-Gómez et al., 2012), and a significantly lower relative risk of overweight/obesity (Perusse-Lachance et al., 2010).

Supporting HEI student populations to increase physical activity (PA), is, therefore, a prudent strategy to enable physiological health and psychological wellbeing. In this regard, HEIs are potent PA promotion settings (Kljajević et al., 2021) that annually allocate substantial resources to enable recreational and health-related PA, in addition to facilitating opportunities for students to participate in a suite of structured and/or high-performance varsity sports (Murphy et al., 2015). In Ireland, the SASSI re-enforced the collective magnitude of the higher education sector as a PA promotion setting, purporting the annual collective sectoral investment in sport and PA provision to amount to €11 million, and the collective student membership of varsity sports clubs to exceed 32,000.
(Murphy et al., 2015). As a more recent progression of the SASSI, the 2020 Student Sport Ireland (SSI) Members’ Self-Assessment Review (SAR) reported a mean capital investment of €6.25 million (PA facilities), and current investment of €2.73 million (sport, PA, and exercise provision), across the 17 participating HEIs. Moreover, as a notable indicator of increased sectoral awareness of the national Healthy Campus agenda, it is pertinent to note that ‘Healthy Campus’ initiatives were comprised as a fundament benchmarking metric within the assessment (Student Sport Ireland & Sport Ireland, 2020).

Overall, it is well-accepted that PA is a multi-faceted behaviour, impacted by a multitude of determinants within the HEI environment (Murphy et al., 2015). A recent systematic literature review (SLR) conducted by Gropper et al. (2020) highlighted the transition from secondary to higher education as a life stage during which PA levels have been observed to decrease. In a study encompassed within this review, 45.4% of a sample of 689 HEI students in Germany reported that their overall PA volume had decreased relative to their final years in secondary education (Diehl & Hilger, 2016). Although data were self-reported, it was pertinent to note that the proportion of students who reported a decline in PA was greatest in Semesters 1-3 (coinciding with students’ primary transition from secondary to their undergraduate (UG) higher education programme) and also amongst students in Semesters 6-9 (a secondary transitional period from UG to postgraduate (PG) programmes, suggesting that PA may be negatively impacted by academic demands (Diehl & Hilger, 2016). This has been further evidenced in the work of Bennasar-Veny et al. (2020), whereby 48% of a sample of 444 students reported either a cessation (15%) or a decline (33%) in their PA following the commencement of their studies at a HEI in
Spain. Notably, this study also reported a significant negative correlation between males’ PA volume and study time (Bennasar-Veny et al., 2020).

Notwithstanding methodological variances, and the potential limitations of self-report data, it is apparent from both Irish and international literature that between 30-40% of HEI student cohorts may not habitually attain even the minimum recommended volume of PA. Relative to a minimum weekly aerobic PA volume of at least 150 minutes at moderate intensity, 75 minutes at vigorous intensity or a cumulative MVPA equivalent, the Spring 2021 wave of the American College Health Association’s National College Health Assessment III (2021d) classified 67% of students as sufficiently aerobically active. However, only 42.3% were formally classified as ‘active adults’, in terms of having attained both minimum aerobic PA, in addition to two muscle strengthening sessions per week (ACHA-NCHA, 2021d).

Elsewhere, in the most recent iteration of the Finnish Student Health Survey, 11% of a sample of 3,082 HEI students reported ‘never’ engaging in exercise (Kunttu et al., 2017). Moreover, 38% of a sample of 3,077 students of a HEI in Australia did not attain sufficient PA (Whatnall et al., 2020). In earlier research conducted within a UK HEI, an alarming 70% of a sample of 410 students were deemed insufficiently physically active (Dodd et al., 2010). This was also consistent with a study in Columbia (N=5,291) within which only 36.6% of male and 20.3% of female HEI students were deemed to have met the minimum PA guidelines (Ramírez-Vélez et al., 2015). In Ireland, the SASSI deemed 64.3% of its nationally weighted sample (N=8,122 HEI students) to be ‘high active’ (71.2% males vs. 57.8% females) using the validated International Physical Activity Questionnaire (Murphy et al., 2018).
A notable gender differential appears to have emerged within the literature, whereby male HEI students have consistently been posited as more active than their female counterparts (Bennasar-Veny et al., 2020; Dodd et al., 2010; Núñez-Rocha et al., 2020). In terms of organised sport, the Student Lifestyle Survey conducted amongst undergraduate students in the National University of Ireland, Galway (NUIG) also reported that male students spent significantly more hours per week engaged in sport (3.7 vs. 1.7) and/or contributing to sports clubs (1.5 vs. 0.7); a gender differential that was not observed for other extra-curricular activities such as contributing to societies or volunteering (Mac Neela et al., 2012).

Finally, HEIs are also particularly amenable settings for the implementation, evaluation and dissemination of rigorous campus PA interventions amongst sizeable cohorts of HEI students (Plotnikoff, Costigan, et al., 2015). A multitude of PA interventions have been documented in international literature focussing on a variety of constructs, such as daily step counts/walking (Tully & Cupples, 2011), in addition to more structured exercise activity (Sailors et al., 2010). Web-based PA interventions have also demonstrated promising efficacy (Duan et al., 2017; Kwan et al., 2013; Okazaki et al., 2014). Notably, in a recent systematic review of global campus-based PA interventions amongst HEI student cohorts, 18/29 studies (62%) demonstrated a significant improvement in a PA-related outcome (such as volume, frequency, quantitative METs, and/or amelioration of perceived PA barriers) (Plotnikoff, Costigan, et al., 2015).
Sitting Time and Sedentary Behaviour

Sitting time has also emerged as a distinct metabolic risk factor for all-cause mortality, irrespective of an individual’s relative engagement in leisure-time and/or structured PA (Katzmarzyk et al., 2009). Given the inherently sedentary behaviours associated with academia, excessive sitting time constitutes a particularly concerning health risk indicator amongst HEI student cohorts. In an Irish context, students’ mean time engaged in ‘sedentary behaviours’ reported in the SASSI was 12.1 hours (± 7.37) during weekdays, and 10.1 hours (± 8.67) at weekends (Murphy et al., 2018). In the 2016 wave of the Finnish Student Health Survey, median daily sitting times of 11 hours and 10.25 hours were reported for males and females, respectively (Kunttu et al., 2017). A more recent systematic review and meta-analysis of 32 studies investigating sedentary behaviours concluded that HEI students appear to engage in greater sedentary behaviours relative to general populations, with a mean daily sitting time of 7.29 hours (Castro et al., 2020).

Overweight, Obesity and Body Composition

The 2019 ‘Healthy Ireland’ survey purported the cumulative population prevalence of overweight/obesity in Ireland to be 60%, with an age-stratified prevalence of 28% amongst those between the ages of 15 and 24 (IPSOS MRBI & Dept. of Health, 2019). The transition from secondary level education to higher education may perpetuate weight gain (Deforche et al., 2015), and therefore constitutes a time point of particular of interest in the context of broader societal and public health efforts to address obesity.

The concept known as the ‘Freshman 15’ posits that HEI students gain an average of 15 pounds (6.8kg) in total body mass across their first year within higher education.
Although the concept is popular within the media, meta-analyses have concluded that the ‘Freshman 15’ quantitatively overestimates the magnitude of gain in body mass (Vadeboncoeur et al., 2015; Vella-Zarb & Elgar, 2009). Nonetheless, the freshman year has still been highlighted as a time during which some students gain significant body mass (Beaudry et al., 2019; Deliens et al., 2019; Vadeboncoeur et al., 2015; Vella-Zarb & Elgar, 2009). Considering that obesity increases the risk of developing a multitude of chronic diseases (Finer, 2015), it is imperative that HEIs attempt to implement educational, behavioural, and multi-component initiatives and policies to enable students to attain and/or maintain a healthy body composition.

Previous research within a HEI in the USA reported deleterious trends in the health-related components of fitness (including body composition) of Year 1 undergraduate (‘freshman’) student cohorts from (i) 1994-1996, (ii) 2005-2006, and (iii) 2010-2011 (Wetter et al., 2013). Evidence has also continued to emerge regarding detrimental changes to students' body composition parameters across the duration of academic programmes (Olansky et al., 2021). In this regard, a longitudinal study (4.5 year trajectory) employed a multi-level modelling technique to analyse changes in the anthropometric profiles (Body Mass Index [BMI], Fat Mass [FM], Fat Free Mass [FFM], Fat %, Waist Circumference [WC]) of 340 students of a HEI in Belgium. Overall, 77.4% of the student sample exhibited an increase in BMI, and increases in body fat percentage were observed amongst 69.3%. Notably, the magnitude of the increase in students’ body mass was deemed ‘clinically relevant’ (≥ 5% of body mass) in 53% of cases. Amongst both males and females, the greatest increases in body mass were observed to have occurred during the first semester, and again during the final academic semester (Deliens et al., 2019).
In terms of prevalence, a multi-region cross-sectional study that encompassed the objectively measured BMI values of 15,686 HEI students across 22 countries within the Caribbean, South America, Africa, and Asia reported a total overweight/obesity prevalence of 22% (24.7% of males vs. 19.3% females) (Peltzer et al., 2014). Similar findings were reported in an Italian study that encompassed an objective anthropometric assessment of a cohort of HEI students (N=734), whereby the prevalence of overweight/obesity (measured via BMI) was 28.4% amongst males and 13.5% amongst females (Zaccagni et al., 2014). Although a significantly (p<0.05) positive correlation between BMI and body fat percentage was found amongst both males and females, the authors acknowledged the limitations of BMI, and the potential under-recognition of excess body fat in this regard.

A multitude of studies have used self-reported height/body mass to derive BMI, and hence report the cross-sectional prevalence of overweight/obesity amongst HEI student cohorts (Davoren et al., 2015; El Ansari, Oskrochi, et al., 2014, Evans et al., 2021; Kunttu et al., 2017; Piqueras et al., 2011; Velten et al., 2018). Velten and colleagues (2018) stated that “self-reported measurements of height and weight have been found to be very reliable, except for highly obese individuals” (Velten et al., 2018, p. 5). Although widely utilised within international literature, self-reported data may underestimate rather than overestimate BMI, as evidenced by previous research involving HEI student participants, whereby students exhibited a tendency to over-report height and under-report body mass (Wardle et al., 2006). Therefore, it is possible that the prevalence of overweight/obesity may be somewhat greater than what has been previously outlined in research that has relied on self-reported data.
In an Irish context, although greater proportions of female students (15% vs. 2%) reported that they engaged in a ‘weight-reduction diet’ (Hope et al., 2005), the CLAN study did not elicit any measures of students’ body habitus or body composition. In this regard, the SASSI constitutes the most recent national reference point for the prevalence of overweight/obesity amongst HEI students in Ireland. Interestingly, similar prevalence data was reported based on both self-reported (28% overweight/obese as per SASSI Phase Two, N=8,122, and objectively measured height and body mass (28.7% overweight/obesity prevalence amongst a smaller sample of 463 students during SASSI Phase Three) (Murphy et al., 2015).

Nutrition

As a modifiable risk factor, unhealthy dietary behaviours are of specific interest in terms of addressing overweight/obesity (Deliens et al., 2014), and reducing overall NCD risk (Olatona et al., 2018). In this regard, there is an explicit public health rationale to promote and enable healthier nutritional behaviours across all age strata (Hilger et al., 2017). HEIs are influential settings to positively impact nutritional outcomes, given the high frequency and volume of collective habitual dietary choices made by student cohorts within the context of a quintessential HEI’s food environment. In a study conducted in an Australian HEI, 93% of the sample of 653 students reported purchasing food within the HEI’s food environment at least ‘sometimes’ (Tam et al., 2017), re-enforcing the importance of the campus as an opportunistic dietary intervention and HP setting.

Worryingly, however, sub-optimal F&V intake has been consistently reported among HEI students in international literature (El Ansari, Stock, John, et al., 2011; Hilger et al.,
In addition, although confined to self-reported data from female HEI students (n=272) who were members of a weight-loss programme (‘Slimming World’), a study conducted in the UK reported a significant association between self-reported weight gain at university (>12kg) and low daily intake of F&V (Sprake et al., 2017). Socio-demographic variables may also mediate dietary behaviours, as evidenced by a cross-sectional study (n=593) within a multi-campus HEI in Spain. In this study, multivariate logistic regression identified a series of significant predictors of unhealthy diet including identifying as male, socioeconomic status, having one’s family home outside of the HEI’s city (hence living in student accommodation rather than family home), studying a ‘Social Sciences’ vs. ‘Health Sciences’ discipline, and having an underweight BMI (Martinez-Lacoba et al., 2018). As a context-specific demographic variable of interest, moving away from the family home to attend higher education has been associated with sub-optimal changes in the health-related dietary behaviours of HEI student cohorts (El Ansari et al., 2012; Papadaki et al., 2007).

In essence, it appears that the determinants of HEI students’ eating behaviours are comprised of personal motivations and self-regulation, in addition to the unique barriers interwoven within the campus environment and social constructs of the college lifestyle (LaCaille et al., 2011). Multi-component barriers to healthy eating may include time constraints due to academic workloads, in addition to a perceived lack of healthy options provided at the campus dining facilities (Hilger et al., 2017). Given the complexity of the socio-ecological food environment within any HEI (cultural context, HEI residential structure, meal offerings, food policies and environments, pricing), it is imperative that caution is exercised when drawing inferences between international literature,
particularly between studies conducted in Europe relative to those in the USA, where meal choices are less autonomous (Deliens et al., 2014).

In a European context, Deliens et al. (2014) qualitatively investigated students’ (i) perceptions of the determinants of their dietary habits, and (ii) recommendations for tailored dietary interventions within a HEI setting in Belgium. As outlined in Figure 2.5, inductive thematic analyses of data from a series of five focus groups revealed multi-level ecological determinants of dietary behaviours, encompassing individual level characteristics (behavioural control, beliefs and mood state), in addition to broader environmental constructs such as food availability, cost, normative cultures within student residences, stressors such as exams, food policy, legislative influences, and socio-cultural norms.

![Figure 2.5 Ecological determinants of students’ eating behaviour within a HEI setting (Deliens et al., 2014)](image-url)
From a practice perspective, a systematic review by Roy and colleagues (2015) investigated nutritional interventions that have been implemented within HEIs such as educational initiatives (primarily nutrition labelling and educational and/or motivational messaging within food and beverage outlets), interventions to regulate portion sizes within food and beverage (F&B) outlets, and initiatives to reduce the cost of healthier foods. Although it was concluded that interventions to maximise the availability and reduce the cost of healthier foods within HEI settings can result in improved dietary behaviours, there was substantial methodological heterogeneity and limitations noted across the body of literature. Therefore, more rigorous and longitudinal research designs, such as randomised control trials (RCTs), are required in this domain to investigate the impact of campus based nutrition interventions on the dietary behaviours of HEI students (Roy et al., 2015).

**Tobacco Smoking and Illicit Substance Use**

Although longitudinal trends cannot be elicited from cross-sectional data, the reported prevalence of tobacco smoking amongst HEI students in Ireland appears to have reduced over time; 27% in the CLAN study (Hope et al., 2005), 23% in the NUIG Student Lifestyle Survey (Mac Neela et al., 2012), and 21% in the SASSI (of which only 10% constituted daily smokers) (Murphy et al., 2015).

Conversely, however, more worrying trends have emerged in terms of recreational and/or illicit drugs. Previous research involving a cohort of university students in Spain reported that 22.5% of hair analyses were positive for cocaine and 5% for amphetamines (Quintela et al., 2000). More recently, concerning patterns of drug use were also identified amongst
a cohort of 1,177 HEI students in Finland, whereby one in five students (20.5%) reported either ‘regular’ (1.5%) or ‘occasional’ (19%) drug use (El Ansari et al., 2020). Misuse of prescription medications has also been reported amongst HEI cohorts, such as stimulants to promote wakefulness and improve academic efforts, tranquilisers to attenuate anxiety, and sedatives to aid sleep (Bennett & Holloway, 2017).

The most recent Irish data pertaining to HEI students’ habitual use of illicit drugs can be derived from the ‘Drug Use in Higher Education in Ireland’ (DUHEI) survey, a national study that gathered data from a proportionally representative sample of 11,592 students across 21 HEI settings in 2021 (80.6% undergraduates, 60.2% female, median age 21) (Byrne et al., 2022). Only 29.8% of participants perceived that drug use was not a normal aspect to college life (53.5% agreed and 16.5% were neutral). In addition, 55.3% reported having used an illicit drug during their lifetime (of which 16.2% were classified as ‘recent’, and 19.1% as ‘current’ drug users at the time of data collection). Notably, 51.9% of Year 1 undergraduates had used drugs, and 15.6% of postgraduate students were classified as ‘current’ drug users at the time of data collection. It appears that drug use patterns in Irish HEIs have evolved substantially since the CLAN study in 2005, manifesting in a marginal reduction in cannabis use, but concurrent increased use of Class A drugs such as cocaine and ecstasy/MDMA. Overall, the DUHEI study has served to highlight the pervasive and normalised drug use patterns of contemporary HEI students as a fundamental public health issue.
Mental Health and Wellbeing

It is well-established that higher education constitutes a high-risk life stage for the onset and/or exacerbation of mental ill health (Hernández-Torrano et al., 2020; Price et al., 2019). HEI student cohorts are habitually exposed to psychological stressors inherently embedded within the higher education experience such as academic pressures, financial difficulties, and uncertainty regarding the future (Beiter et al., 2015; Deasy et al., 2014). In the UK, a study of students across seven HEIs highlighted that, despite favourable perceptions of health and quality of life, exams were a source of stress for 40% of the entire cohort and psychosomatic symptoms were prevalent such as fatigue (59.7%), headaches (57.8%), back pain (42.7%), nervousness/anxiety (41.8%), and depressive mood (28.1%) (El Ansari, Stock, Snelgrove, et al., 2011). In more recent Irish research amongst a cohort of nursing and teacher-education students, 41.9% exhibited significant distress on a validated measure (Deasy et al., 2014).

Mental health issues have been purported to account for 20-40% of all presentations to HEI Student Health Services in Ireland (Hill et al., 2020). Contemporary HEI cohorts are comprised of greater proportions of vulnerable groups (LGBTQ+ students, international students, students in financial difficulty and/or without stable accommodation, students with concurrent disabilities), which has contributed to an increase in both the volume and complexity of mental-health presentations to HEI supports (Karwig et al., 2015).

Concurrently however, it does not appear that student support services have been sufficiently resourced to cope with this increased burden, and/or enabled to offer cohesive referral pathways to community mental health services (Hill et al., 2020; Macaskill, 2013), which further substantiates the rationale for preventative campus HP strategies.
Moreover, some HEI students may perceive a sense of extant stigma, posing a barrier to seeking help (Storrie et al., 2010). Worryingly, a report commissioned by ‘ReachOut Ireland’ reported that awareness of support services may in fact be lowest amongst sub-cohorts of HEI students who exhibit the greatest psychological need for same (Karwig et al., 2015).

Using a validated measure (Mental Health Index-5), previous Irish research reported a significantly lower mean score (constituting less favourable mental health) amongst a cohort of 763 HEI students relative to an age-matched sample of young adults from the general Irish population (Houghton et al., 2010). Similarly, a more recent national cross-sectional study commissioned by the Union of Students in Ireland (USI) reported substantial mental health issues amongst a cohort of 3,340 HEI students, with particularly concerning prevalence data reported for ‘extremely severe’ anxiety (38.4%), depression (29.9%), and stress; 17.3% (Price & Smith, 2019).

Stress, anxiety, depression, and suicidal ideation have also been extensively reported amongst international HEI student cohorts (Bayram & Bilgel., 2008; Eisenberg et al., 2007; Grasdalsmoen et al., 2020; Mortier et al., 2018; Satinsky et al., 2021). Although there has been some international variability in the methodological assessment of depression amongst HEI students, a systematic review of 24 studies reported a pooled prevalence of 30.6% (Ibrahim et al., 2013). Of further concern, a recent meta-analysis involving a cumulative sample of 634,662 HEI students reported a 22.3% prevalence of suicidal ideation, 6.1% of a suicide plan, and 3.2% of a previous suicide attempt (Mortier et al., 2018). Furthermore, given the low autonomy, heavy workloads and poor work-life balance inherently associated with postgraduate research (Levecque et al., 2017),
postgraduate students may also be particularly susceptible to mental ill health, as evidenced by a recent meta-analysis that reported a 24% pooled prevalence of depression (16 studies, N=23,469 total sample), and 17% prevalence of anxiety (9 studies, N=15,626) (Satinsky et al., 2021).

Given the gravity of the findings in this body of international literature, a global mental health research consortium (‘WHO World Mental Health International College Student Initiative’) has been established to gather longitudinal data to inform empirical mental health interventions amongst HEI students (Cuijpers et al., 2019). In Northern Ireland, the ‘Ulster University Student Wellbeing Study’ is affiliated to this global consortium, and commenced baseline data collection in 2017 amongst a cohort of Year 1 students (N=739) using a web-based questionnaire comprised of validated measures (McLafferty et al., 2017). Following the application of representative weighting to the sample, the cumulative baseline lifetime prevalence of suicidality was 31%, constituting the most prevalent mental health disorder, followed by major depression (24.2%) and generalised anxiety (22.6%). From a demographic perspective, females and students who did not identify as heterosexual were significantly more likely to have reported a lifetime prevalence of both anxiety and depression (McLafferty et al., 2017).

As potentially effective settings for preventative and treatment strategies, HEIs have a fundamental duty of care to enable positive health and wellbeing, and to support students who may present in acute crises (Macaskill, 2012). Pragmatically, mental ill-health negatively impacts academic performance (Eisenberg et al., 2009; Karwig et al., 2015) and therefore early intervention may serve to address fundamental organisational priorities such as increasing student engagement and retention. Interestingly, the cost-
benefit associated with early identification of mental health issues to prevent attrition has also been reported in previous work (Eisenberg et al., 2009).

Finally, it appears that mental health is intrinsically and reciprocally linked to further components of lifestyle such as PA (Grasdalsmoen et al., 2020), sleep (Orzech et al., 2011), drug use (Byrne et al., 2022), and alcohol consumption (Tembo et al., 2017). Particularly robust evidence linking physical activity with mental health has recently emerged from the ‘SHoT’ national study of 50,054 HEI students in Norway, whereby students who reported less frequent PA (‘never’ vs. ‘almost every day’) were significantly more likely to exhibit both psychological distress (3.12 times more likely amongst men, 2.63 times more likely amongst women) and depression (4.08 times more likely amongst men, 2.53 times more likely amongst women) (Grasdalsmoen et al., 2020). Therefore, it appears that integrated multi-component HP interventions within HEIs, such as initiatives and policies to enable PA, may serve to improve mental health of campus populations, in addition to ameliorating overall physiological health risk.

Sleep

Poor sleep is a well-established symptom of, and a distinct risk factor for, a multitude of adverse health conditions (Lund et al., 2010) such as overweight/obesity, cardiovascular disease, depression, Alzheimer’s disease, and Parkinson’s disease (Hale et al., 2020). Improving sleep quality, which appears to be sub-optimal amongst HEI student cohorts (Gilbert & Weaver, 2010; Marques et al., 2017), could serve to enhance both quality of life as well as academic performance (Ahrberg et al., 2012; Gilbert & Weaver, 2010; Hayley et al., 2017; Seoane et al., 2020; Suen et al., 2010). Inherent aspects of the higher
education environment have been postulated as deterrents to restorative sleep; fluctuating academic demands, workload related stressors, examination periods, socialising, noise disturbances, and erratic schedules (Campbell et al., 2018; Foulkes et al., 2019; Galambos et al., 2009; Lund et al., 2010). A systematic review and meta-analysis comprising of data from 16,478 HEI students across Asia, the USA, Europe, and Africa (all of whom were living away from home to attend higher education), calculated the pooled prevalence of insomnia to be 18.5% (Jiang et al., 2015).

Indeed, concerning sleep-related parameters have been reported amongst HEI students in Ireland (Mac Neela et al., 2012), the USA (Becker et al., 2018; Lund et al., 2010), Australia (Batten et al., 2020), China (Cahuas et al., 2020), Germany (Schlarb et al., 2012), Jordan (Albqoor & Shaheen, 2021), and Norway (Hayley et al., 2017). Notwithstanding the acknowledged heterogeneity and variability in the methodological measurement of sleep (Jiang et al., 2015; Memon et al., 2021), sleep duration and sleep quality appear consistently sub-optimal amongst international HEI student cohorts. Notably, 27.8% of a sample of 418 students from a HEI in India were classified as ‘sleep deprived’ (Manzar et al., 2015). Moreover, although the response rate was exceptionally low (2%), only 10% of a sample of 601 students from an Australian HEI reported habitual sleep duration of at least 8 hours (Batten et al., 2020).

Increased use of digital devices may also negatively impact sleep. In a recent, robust systematic review (23 studies, of which 9 specifically involved HEI students), all included studies demonstrated a significant association between ‘Internet Addiction’ (IA) and sleep difficulties (Alimoradi et al., 2019). The impact of digital activities on students’ sleep has also been evidenced in a study involving first year students within a HEI in the
USA (N=254), which highlighted key metrics such as a relatively late mean bedtime (0113hrs), habitual use of digital devices prior to bedtime, and an association between increasing quantity of total digital time and sleep disruption (Orzech et al., 2016).

Sleep-wake irregularity and fluctuations across the calendar week have been reported within the literature, whereby HEI students typically exhibit later wake times and bedtimes at the weekend (Lund et al., 2010). Worrying coping strategies have been reported by HEI students to induce sleep, such as alcohol intake and self-medication (Batten et al., 2020). Moreover, poor sleep has been reported to be associated with smoking, sustaining an injury, abstaining from breakfast, recreational drug use, weight gain, and psychological stress (Gardani et al., 2022; Ludy et al., 2018; Lund et al., 2010; Peltzer & Pengpid, 2015). In China, a cross-sectional study involving 1,143 students from a single HEI reported that sleep-related variables and physical activity accounted for 35.3% of the variance in depression scores (Cahuas et al., 2020).

**Sexual Health**

It is well established that the prevalence of STIs is greatest amongst younger age cohorts (Davoren et al., 2014; Lally et al., 2015). Although there was an overall reduction in STI incidence in Ireland in 2020 due to the COVID-19 pandemic, concerning age-stratified (20-24 years) incidence increases were reported between 2018 and 2019 for STIs such as early infectious syphilis (EIS: + 62.6% vs. 2018), gonorrhoea (+ 17.1%), and chlamydia (+15.7%) (Health Protection Surveillance Centre [HPSC], 2021).
Previous Irish research also highlighted the concerning STI incidence amongst, and a collection of risk related sexual behaviours (multiple partners, not wearing condoms) exhibited by, a cohort of 2,784 adolescents (aged 13-19) who presented to three Sexual Health Clinics between 1999 and 2009 (Davoren et al., 2014). Crucially, that study explicitly cited HEIs as target settings for sexual health interventions. In the USA, a casual ‘hook-up’ sexual culture has been reported within HEIs, with a worrying lack of awareness or concern regarding vulnerability to sexually transmitted infections (Downing-Matibag & Geisinger, 2009). HEI students may also inaccurately overestimate their peers’ sexual behaviours in terms of sexual activity and number of partners, further perpetuating inaccurate social norms (Scholly et al., 2005). As indicators of risk, relatively high rates of emergency contraception use have been reported amongst HEI students both in Ireland and abroad (Coronado et al., 2017; Hope et al., 2005). Furthermore, in a study of students from 6 HEIs in New Zealand (N=2,922), only 54% stated that they had used a condom during their most recent sexual intercourse. In that study, it also appeared that students’ sexual behaviours were intrinsically linked with alcohol, with one-third of students having consumed either ‘a little’ (18%) or ‘a lot’ prior to their last sexual intercourse (Psutka et al., 2012).

In an Irish context, habitual sexual risk taking was previously reported in a cross-sectional study of HEI students (N=419), such as not using condoms during intercourse (19%). Furthermore, 20.5% cited impaired judgement due to alcohol or drug consumption as a reason for not using a condom (20.5%). Fundamental limitations in students’ pre-requisite knowledge and perceptions were evident, with 44% believing that STIs did not constitute any long-term health risk, and 55% exhibiting a poor understanding of the mechanism of the oral contraceptive pill (Lally et al., 2015). Given the apparent knowledge-gaps, and
under-recognition of STI risks exhibited by both Irish and international HEI student cohorts, (Cassidy et al., 2018; Lally et al., 2015; McKenna et al., 2021), it is imperative that sexual health should continue to be prioritised as part of campus HP activities, and capacity-building initiatives should be considered under the remit of overarching ‘Healthy University’ strategies to positively enable health and wellbeing.

2.5.6 HEI Staff: A Complex, yet Under-Researched Cohort

HEIs also constitute prominent workplace settings for sizeable cohorts of staff, who are stakeholders in, and potential beneficiaries of, campus HP interventions. Consequently, there is an inherent alignment between ‘Healthy University’ strategies, and the broader ‘Healthy Workplace’ agenda and policy context. In a conceptual model that traversed settings-based HP and occupational health, the World Health Organisation (WHO) posited a ‘Healthy Workplace’ as a fundamental societal setting that continuously engages in collaborative cross-organisational action to enhance staff health, and, in turn, the economic viability of the organisation (WHO & Burton, 2010).

As a further public health alignment, the socio-economic rationale for workplace HP interventions to alleviate exposure to occupational stress (OS), and thus reduce the costs associated with absenteeism and/or poor health outcomes, has been previously noted within the literature (Noblet & LaMontagne, 2006). In the broader context of non-communicable disease (NCD) prevention strategies, ‘workplace’ HP interventions tailored to HEI staff may also serve as effective screening and intervention conduits through which to identify, and address, cardiometabolic risk factors (Butler et al., 2015). Interestingly, in a prospective study involving 1,365 staff of a single HEI in Malaysia, a
discrepancy was noted between participants’ self-reported history of hypertension, and their objectively measured blood pressure during baseline health screening aligned with a workplace HP intervention. Only 18.2% self-reported a clinical diagnosis of hypertension, which was substantially lower than the 56.7% deemed to exhibit a ‘high risk’ for hypertension (systolic BP ≥120, diastolic ≥80 mmHg) following objective measurements (Eng et al., 2016). Although cultural differences in lifestyles, healthcare systems, and public-health strategies preclude direct inferences from, or quantitative generalisability of, these data to HEI staff in Ireland, findings were indicative of the inherent value of HP initiatives within HEIs as a pragmatic cardiovascular screening modality.

HEI staff are heterogeneous cohorts, comprised of ‘academic’, and ‘non-academic’ strata whose job roles, demands, and contexts vary substantially (Faghy et al., 2022; López-Bueno, Smith, et al., 2020; Pignata et al., 2016). The demographic characteristics, and ‘life-stage’ concerns, of HEI staff appear to diverge from those of students, as evidenced by the substantial emphasis on the domains of occupational stress (OS) and work-life conflict within the literature (Biron et al., 2008; Doherty & Manfredi, 2006; Lester, 2015; Winefield et al., 2014; Wray & Kinman, 2021), in contrast to the ‘coming of age’ behavioural risks quintessentially associated with the student lifestyle (El Ansari, Stock, John, et al., 2011).

Overall, it appears that HEI staff are somewhat less represented in campus HP literature, relative to the abundance of research pertaining to the health and wellbeing of students (Hanson 2013, cited in Cooper & Barton, 2016). The paucity of data pertaining specifically to HEI staff has been explicitly noted within the domains of occupational
stress and wellbeing (Bell et al., 2012), and PA (Borowski et al., 2021; Leininger et al., 2013). Borowski et al. (2021) perceived the under-investigation of the PA patterns of ‘non-academic’ staff within HEIs as a notable gap, given the sedentary tasks inherently embedded within administrative and/or professional roles. Moreover, Bell et al. (2012) commented on the quasi-paradox within international empirical literature, perceiving the abundance of research investigating OS and wellbeing as evidence of an innate academic interest in these domains, yet concurrently noting that most studies were conducted in professional settings other than HEIs.

**Sectoral Context and Determinants of Health**

From a positivist perspective, academic staff have reported high levels of job satisfaction (Byrne et al., 2012; Houston et al., 2006), however sectoral discourse has also acknowledged that both stress and satisfaction may be embedded within contemporary roles (Shin & Jung, 2014). The precarity of many staff roles within an increasingly ‘neoliberal’ higher education sector (Courtois & O'Keefe, 2015) also constitutes a pragmatic consideration for campus HP practitioners. Within a single HEI in Australia, Lindsay et al. (2016) referred to the setting as an increasingly “white collar workplace” (p.4), and recommended HP interventions to address the deleterious changes in fundamental health related metrics observed following comparative analyses of data gathered from two distinct cohorts of staff (2009 vs. 2013). In this regard, whilst scores on certain psychometric scales appeared more favourable, the 2013 cohort exhibited significantly (i) lower physical activity (PA), (ii) higher weekly sitting time, and (iii) lower physical functioning on a validated quality of life instrument (Lindsay et al., 2016).
In addition, both staff perspectives, and health-related needs, may also evolve throughout the course of a quintessential academic career, as evidenced within a study involving a sample of 869 staff from 13 HEIs in Australia, whereby staff who reported greater awareness of the availability of stress-reduction programmes exhibited higher levels of commitment to the HEI, more positive perceptions of work-life balance, greater trust in senior management, and higher overall job satisfaction (Pignata et al., 2016). However, the strength of these associations varied according to length of service within the organisation, whereby the most favourable perceptions were noted amongst mid-career staff (6-10 years), relative to those who reported 20-38 years of service (Pignata et al., 2016).

**Occupational Stress and Mental Wellbeing of HEI Staff**

Occupational stress (OS) manifests when perceived demands exceed, and/or cannot be sufficiently offset by, coping resources (Pignata et al., 2016). Worryingly, an ESRI publication reported that the prevalence of OS amongst employees in Ireland increased from 8% to 17% between 2010 and 2015 (Russell et al., 2018). Conceptually, OS can be considered as both an adverse physiological outcome, and an antecedent to further negative health-related consequences (Bakker et al., 2010; Mark & Smith, 2018). In previous qualitative research (semi-structured interviews with 9 staff of a HEI in the UK), ubiquitous OS was described, in addition to a breadth of perceived stress-related outcomes such as disturbed sleep, anxiety, negative effects on personal relationships, emotional lability, work-related ruminations, and reduced performance (Mark & Smith, 2018).
Within the literature, many studies examining the manifestation of OS amongst HEI staff have been theoretically rooted within the ‘Job Demands-Resources’ model (Komlenac et al., 2022; Mudrak et al., 2018; Naidoo-Chetty & du Plessis, 2021a, 2021b), which is a paradigm that encompasses both the collective demands, and resources associated with a job, as further bidirectional mediators of strain, health related outcomes, engagement and occupational performance (Demerouti et al., 2001; Schaufeli & Taris, 2014). In a study involving 3,117 academic staff from 17 HEIs in Australia, Bakker et al. (2010) utilised a structural equation modelling technique which identified a significant relationship between job demands (workload overwhelm, conflict between work and home life) and impaired health. Concurrently, from a positivist perspective, the model confirmed a concurrent significant relationship between job resources (perceived autonomy and fairness, trust in management, sense of security) and overall commitment to the HEI organisation (Bakker et al., 2010). More recently, a study involving 1,389 academic staff recruited from public HEIs in the Czech Republic, further supported that occupational wellbeing and engagement are determined through the duality of demands and resources, and also highlighted the significant predictive relationships between job resources, engagement, and overarching job satisfaction (Mudrak et al., 2018). Overall, these data are indicative of both an organisational, and HP rationale for (i) interventions to reduce job demands through workload alleviation and strategies to enhance work-life balance, in addition to (ii) positivist, initiatives that endeavour to enhance resources through activities to build a culture of trust, social cohesion, open-communication, and secure autonomy, within contemporary HEIs.

In addition to inherent components and/or demands of a work-related role, the broader environmental context within which that role is performed can also mediate OS (WHO,
2020). At sectoral level, a substantial body of international evidence suggests that OS is somewhat pervasive within the contemporary HE environment (Biron et al., 2008; Pignata et al., 2016; Sang et al., 2013; Wray & Kinman, 2021). Of concern, previous Irish research involving a cohort of 1,131 academic staff within the Institute of Technology sector (Kenny, 2015) reported high levels of stress, whereby the intensity, pace, and perceived pressure to work long hours were reported as frequent sources of either ‘high/very high’ stress (83%, 56%, and 40%, respectively). Elsewhere, in a study of 1,086 staff of a HEI in Canada (encompassing academic, management, professional, clerical, trade and technical staff), 40% exhibited high levels of OS (Biron et al., 2008), while a study conducted in Malaysia reported that scores on a validated instrument to measure health-related quality of life were less favourable among a cohort of lecturers in comparison to the general Malaysian population (Ismail et al., 2013).

Notably, recent research conducted in the UK to investigate the wellbeing of HEI staff highlighted a plethora of concerning metrics amongst a cohort of 2,046 HEI staff (85.9% ‘academic’ [teaching and/or research], 14.1% ‘non-academic’ [professional and management staff], mean age 48 ± 10.54 years) (Wray & Kinman, 2021). In a cross-sectional design, staff self-reported their frequency of exposure to a standardised list of psychological hazards, and completed a suite of further validated items embedded within a web-based questionnaire instrument. Overall, 29% exhibited emotional exhaustion indicative of burnout, 36% habitually neglected personal needs in favour of addressing occupational demands, and 61% reported that they would not engage with their manager for OS support, perceiving that line managers lacked knowledge and prerequisite skills in this regard. As indicators of a concerning socio-cultural norm within the higher education sector, 71% perceived that requesting mental wellbeing and/or OS support would
detrimentally impact their reputation, and, ultimately, career progression. Finally, collective scores on the validated Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) were less favourable than the general population. Worryingly, 53.2% exhibited WEMWBS scores of ≤40, which constituted a high risk of depression (Wray & Kinman, 2021). These data consolidate the findings of an earlier cross-sectional study of 307 HEI staff and 120 members of the general population, whereby the HEI staff reported higher levels of anxiety and depression than the general population group (Mark & Smith, 2012). In addition, 40% of the HEI staff cohort stated that their job was related to one or more of their past or current health problems.

In terms of specific job category, previous research reported that academic staff displayed higher job-related strains, lower job satisfaction and higher levels of psychological distress relative to their non-academic counterparts (Winefield et al., 2003). More recently, in the above referenced work of Wray and Kinman (2021), staff whose roles extended to ‘research-only’ reported higher levels of satisfaction than other academic categories (‘teaching’, or ‘combined teaching and research’).

In terms of quantification of workloads, in the UK 22% of HEI staff reported habitually working at least 50 hours per week (Wray & Kinman, 2021). This was consistent with the previous work of Bentley and Kyvik (2012) whereby data gathered from full-time Faculty (academic staff contracted for ≥ 30 hours per week, with combined teaching and research remits) in thirteen countries reported a mean weekly working time of 48.4 hours during the teaching semester, which marginally reduced to 44.7 hours during non-teaching weeks. Little is known about the habitual working hours of HEI staff in Ireland,
although one previous study reported that 25% of accounting and finance academics (N=100) typically worked more than 50 hours per week (Byrne et al., 2012).

Furthermore, the onset of electronic communication within contemporary workplaces may also contribute towards occupational stress, working time and demands. A study in Australia reported higher levels of email overload in a HEI staff cohort versus a comparative population of managers (Pignata et al., 2015). Of note, the academic staff in this study displayed poor email management strategies and a greater tendency to read and respond to emails outside of office hours (Pignata et al., 2015).

Paradoxically, despite the reported difficulties within the higher education sector, in New Zealand, a cohort of academic staff were generally satisfied with certain aspects of their job such as the level of autonomy and variety of duties (Houston et al., 2006). Academic staff in Ireland have reported high levels of overall job-satisfaction (Byrne et al., 2012). However, this study was refined to a sample of 100 staff from one discipline, and is therefore not representative of the entire academic population.

**Physical Activity (PA) Amongst HEI Staff**

As outlined in section 2.5.5, HEIs are pragmatic settings within which to implement and evaluate PA interventions to maximise health and wellbeing (Klajević et al., 2021; Murphy et al., 2015). In a systematic review of campus health interventions tailored towards HEI staff, Plotnikoff, Collins et al. (2015) noted that 90% the PA interventions within the review (9 out of 10 studies included) reported favourable outcomes such as significantly increased step counts, and/or improvements in health-related components of fitness (aerobic capacity, strength, and flexibility). Although structured exercise
interventions (12 weeks’ duration) involving HEI staff have reported significant reductions in body mass (Rebold et al., 2015) and BMI (Corbett et al., 2018). HEI campus settings may be particularly amenable to recreational walking. In the USA, significant increases in PA, and improvements in cardiovascular risk factors, were reported from baseline to follow up amongst 104 HEI staff who completed an 8-week walking intervention (Butler et al., 2015). Moreover, 39 female staff who participated in a short-term (4 week) group-based walking intervention, which was embedded within the HEI’s curriculum to reduce costs, reported significant pre-post increases in frequency (days/week) of walking, frequency of vigorous PA, and significant (p<0.05) reductions in perceived stress (Leininger et al., 2014)

Therefore, as a particularly modifiable behaviour within the campus setting, it is pertinent to note the inverse associations between PA and stress (Leininger et al., 2014; López-Bueno, Andersen, et al., 2020), in addition to the positive associations between PA and wellbeing (Cooper & Barton, 2016; Zayed et al., 2018) that have been previously reported amongst international HEI staff cohorts.

Interestingly, in a cross-sectional study involving 1,025 staff within a HEI in Spain, staff who reported higher PA also reported significantly fewer days of sickness-related absenteeism. Regression analyses indicated that, for each employee, an additional 60 minutes of PA per week would reduce annual absenteeism by 1.5 days (López-Bueno, Smith, et al., 2020). Notwithstanding the cross-sectional design, which precluded inferences in terms of causality, findings supported the broader fiscal rationale for PA interventions amongst HEI staff, given that given that the cost of sick leave within the
Irish public sector amounted to €381.5 million in 2018 (Dept. of Public Expenditure & Reform, 2019).

There is substantial evidence within the literature to suggest that HEI staff place an inherent value on PA as a fundamentally health-promoting behaviour (Cooper & Barton, 2016; Rinaldi-Miles & Das, 2016). Pragmatic barriers however, such as time constraints (Butler et al., 2015; Cooper & Barton, 2016; Leicht et al., 2013) and family responsibilities may reduce PA volume undertaken by HEI staff, as reported by Borowski et al. (2021). Notably, mixed methods research to inform a ‘Healthy University’ initiative within a HEI in the UK, which incorporated qualitative data gathered from 13 staff participants during focus groups, highlighted further socio-cultural barriers to PA embedded within the HEI environment. Barriers described included substantial workload constraints (particularly amongst academic staff for whom work-life boundaries were posited as less distinct), environmental barriers in terms of access to facilities, and a perceived lack of cultural permission to take habitual PA breaks during the working day (Cooper & Barton, 2016).

In terms of PA volume, quantitative analyses comprised within the aforementioned mixed methods research of Cooper and Barton (2016), also classified 27.8% of female, and 13.1% of male staff as ‘low active’ using the short form of the International Physical Activity Questionnaire (IPAQ). In Spain, less than half (47.1% of males, 45.6% of females) of a sample of 757 staff were deemed to exhibit ‘high PA’ (classified as ≥ 160 mins/week) (López-Bueno, Andersen, et al., 2020). In an Irish context, there is a paucity of research investigating the PA levels of HEI staff, but, interestingly, amongst the general population, 54% (46% of males, 62% of females) of participants within the 2019
Healthy Ireland survey did not meet minimum PA guidelines (IPSOS MRBI & Dept. of Health, 2019). Using the Global Physical Activity Questionnaire, plus additional items to investigate PA-related knowledge, one recent cross-sectional study involving a sample of HEI staff (N=138) within an Irish HEI classified 65% of male and 40% of female staff as ‘regularly active’. Of concern, however, only 36% (males) and 33% (females) exhibited knowledge of the national PA guidelines (McCarthy & Warne, 2022).

Demographically, male staff have been reported to undertake significantly more PA than females (Cooper & Barton, 2016; López-Bueno, Smith, et al., 2020; McCarthy & Warne, 2022). Given the noted demographic heterogeneity of HEI staff cohorts, previous studies have also stratified analyses by specific job category (Faghy et al., 2022; Leininger, 2015; Safi et al., 2021). Leininger (2015) ascertained statistical differences in self-reported PA amongst 308 staff of a HEI in the USA, whereby 83.3% of administrative staff, 73.8% of academic staff (‘Faculty’) and 49.9% of general staff achieved the minimum recommended PA volume (Leininger, 2015). In contrast, however, in more recent stratified analyses of PA patterns of staff within a single UK HEI (measured using the IPAQ [short form]), operational staff (cleaners, support, kitchen staff) reported significantly (p<0.05) higher total PA (3741 ± 4952 MET-min/week) relative to either academic (2,661 ± 1,565 MET-min/week), or administrative staff (1,954 ± 1,814 MET-min/week) (Faghy et al., 2022).

**Broader Health and Lifestyle Parameters of HEI Staff Cohorts**

As outlined above, research to inform HP policies and practices in HEI settings has focussed primarily on students, with staff somewhat under-represented in comparison. In
terms of broader health and lifestyle metrics, sedentary time has emerged as a distinct and independent risk factor for poor cardio-metabolic health (Dunstan et al., 2012). Within HEI settings, a cohort of HEI staff in the USA reported spending three-quarters of their working day sitting down (Fountaine et al., 2014). Excessive sitting time was also prevalent among a cohort of HEI staff in Australia (both academic and professional), who reported daily sitting times of between 6 to 7 hours (Leicht et al., 2013). Given the adverse association of sitting time with risk-related metabolic biomarkers (Thorp et al., 2010), all-cause mortality (Katzmarzyk et al., 2009), and psychological distress (Kilpatrick et al., 2013), it is evident that efforts to investigate, and address, this modifiable risk factor amongst Irish HEI staff are urgently warranted.

In terms of body habitus, self-reported height and body mass data from 806 HEI employees at a USA university classified 48% of the sample as either overweight or obese (Freedman & Rubinstein, 2010). Overweight/obesity was more prevalent among males, and older staff, but, interestingly, was not related to job category (academic or administrative position) or to length of service. More recently, in a study involving 276 staff of 2 HEIs in Poland (one of which was a ‘Technical’ University), 45.5% were classified as either overweight (33.8%) or obese (11.7%) based on self-reported height/body mass (Kwiecień-Jaguś et al., 2021). In Ireland, recent data from one campus of a single HEI reported on the sex-stratified prevalence of both overweight (44% of males, 23% of females) and obesity (16% of males, 11% of females) (McCarthy & Warne, 2022). However, given the low sample size, and poor generalisability of that study to HEI staff populations, further research is warranted to examine body habitus amongst HEI staff cohorts in Ireland.
From a nutritional perspective, Abood et al. (2003) noted the “void in research” (p.261) pertaining to interventions tailored towards HEI staff. Previous qualitative research that explored the perceptions of staff within a single HEI in the UK noted the importance of the campus food environment as a potent determinant of habitual dietary food choices (Bevan et al., 2015). Future research is required to investigate the relationship between frequency of exposure to the campus food environment and health-related nutritional behaviours amongst HEI staff in Ireland, given that 49% of a sample of staff within a HEI in the USA did not attain sufficient F&V intake (Freedman & Rubinstein, 2010).

Finally, in a general context, a complex, bidirectional relationship between the ‘workplace’ and alcohol intake has been reported, whereby a workplace can constitute either an opportunistic setting within which to implement HP interventions, and/or a precipitant of hazardous drinking to cope with occupational stress (Anderson, 2012). Little is known about the alcohol consumption patterns of HEI staff cohorts, however one study involving staff of a UK HEI (n=129) reported a hazardous drinking prevalence of 35%, defined by a score of ≥ 8 on the internationally validated Alcohol Use Disorders Identification Test [AUDIT] (Awoliyi et al., 2014).

### 2.6 Conclusion

In conclusion, HP is a relatively emergent discipline, rooted within a positivist paradigm as outlined within the seminal Ottawa Charter for Health Promotion (WHO, 1986). The discipline has shifted towards a settings-based approach, whereby the structures and contexts of habitual societal settings (Kickbusch, 2003; Kokko et al., 2014), such as HEIs (Dooris et al., 2010), are posited to ecologically mediate population health. HEIs have
been directly called to lead, and advocate for, HP action within the Okanagan Charter for Health Promoting Universities and Colleges (2015).

The Healthy University (HU) approach (also referred to as Healthy Campus and/or Health Promoting University) refers to the application of the settings approach to HP within HEIs, and has gained increased prominence both internationally (Healthy Universities, 2022a; IPU&C, n.d.) and in Ireland, as evidenced by the recent launch of the Irish Healthy Campus Charter and Framework (Dept. of Health, 2021). However, it appears that extant gaps remain between the theoretical underpinnings of the HU approach (Dooris et al., 2014) and the constraints within the increasingly performance-driven (Kenny, 2018), and precarious (Courtois & O'Keefe, 2015), contemporary higher education sector.

Of concern, a plethora of risk-related and/or sub-optimal health parameters amongst both Irish and international HEI students have been presented in section 2.5, which have highlighted the urgent need for both (i) continued data collection to monitor trends, and (ii) empirically informed HP interventions within HEIs. Amongst staff, although occupational stress has been psychometrically explored, there appears to be a relative dearth of multi-domain health and wellbeing studies pertaining to this highly influential, yet demographically heterogeneous cohort.

As a final methodological note, a breadth of quantitative and qualitative data have been presented throughout this review. However, given the inherent complexity of health and wellbeing, mixed-methods approaches may serve to explore the determinants of the health-related challenges experienced by student and staff more ecologically, and ultimately, comprehensively. Therefore, the overarching aim of the research described
throughout the empirical chapters of this thesis (Chapters 4-8) is to constitute a mixed-methods baseline needs assessment to inform a settings-based campus HP initiative in a multi-campus ‘case’ HEI in Ireland.
Chapter 3

Methods
3.1 Research Design

As stated in Chapter 1, the overarching aim of this body of research was to constitute a comprehensive needs assessment to inform a campus HP initiative within a multi campus ‘case’ HEI (Cork campuses \([n=4]\) of MTU, formerly CIT). A mixed methods (QUAN-QUAL) design was adopted to undertake five individual, yet related, empirical studies (Table 3.1). Whilst methodological descriptions are presented in each respective empirical study (Chapters 4-8 inclusive), the current chapter serves to provide an insight into the rationale for, and purposive design of, each sequential phase of the research.

<table>
<thead>
<tr>
<th>Table 3.1 Overview of the phased, mixed methods (QUAN-QUAL) design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradigm</td>
</tr>
<tr>
<td>Phase One a Baseline</td>
</tr>
<tr>
<td>Phase Two b Transitional</td>
</tr>
<tr>
<td>Phase Three c Final Qualitative and Triangulation Phase</td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

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a quantitative analysis of data gathered from two web-based questionnaires; one disseminated to students (Study One) and the second to staff (Study Two), b comparative analysis of common items in student/staff questionnaire instruments and qualitative desk review of HEI documentation, c thematic analysis of qualitative data corpus derived from semi-structured interviews and focus groups with a purposive cohort of campus stakeholders (both students and staff)
3.2 Phase One: Baseline Quantitative Phase

As outlined in Table 3.1, Phase One aimed to investigate the baseline health and lifestyle parameters of both student (Study One, Chapter 4) and staff (Study Two, Chapter 5) cohorts in the case HEI. This phase was conceptualised as a quantitative needs assessment that would serve to guide and inform (i) the intricate methodological design of subsequent qualitative phases of the research, in addition to (ii) the future strategic priorities of the campus HP initiative (as outlined in Chapter 9).

3.2.1 Design

Phase One was underpinned by a preliminary scoping review of similar population-based research, to empirically inform a valid and reliable study design. This review substantiated the adoption of a questionnaire-based, cross-sectional design to achieve the objectives set out for both Study One (Bickerdike et al., 2019) and Study Two (Bickerdike et al., 2022). As discussed within Chapter 2, complex associations between, and/or clustering of health-related variables amongst, HEI student cohorts (Dodd et al., 2010), and the ‘general’ Irish population (Conry et al., 2011) have been previously reported within the literature. Given that the current research was the first health promotion (HP) needs assessment of its kind within the case HEI, a breadth of variables were encompassed within this quantitative phase. It was hypothesised that such an approach would enable multiple exploratory analyses to further inform (i) recommendations for future research into specific health-related behaviours exhibited by students and/or staff, and (ii) the design of multi-component interventions under the remit of the campus HP initiative.
3.2.2 Questionnaire Instruments

Based on the initial exploratory scoping review, in addition to a more refined review of health-related validated scales and items, two web-based health and lifestyle questionnaire instruments were designed (one instrument tailored specifically for students of the case HEI, and the second instrument tailored for staff). Both instruments were subject to a rigorous drafting and revision process to ensure face validity with respect to (i) the overarching aim of this thesis (to inform a campus HP initiative), and (ii) the specific purpose of Phase One, which was to quantitatively establish baseline health and lifestyle patterns exhibited by both students and staff of the case HEI.

A preliminary paper-based version of the student instrument was piloted amongst a cohort of 13 full-time undergraduate students from the Department of Sport, Leisure & Childhood Studies (SLCS) within the case HEI. These students were familiar with the basic concepts of HP and were purposively recruited and encouraged to provide feedback and suggestions during a designated participatory pilot session in October 2015 (see Appendix M). Based on feedback received, subsequent modifications were made to the instrument to enhance face validity where appropriate, and to reduce the completion time.

A second wave of technical, web-based pilots of both the student and staff instruments was also implemented in February (student) and March 2016 (staff) respectively. Student technical pilot participants comprised 7 undergraduate students, and a student placement intern with expertise in an allied domain. Staff pilot participants comprised 5 ‘Academic’ staff and 1 technical/support staff member of the case HEI. These logistical pilots were critical to verify the functionality of the web-based survey platform, and its data export function, given the anticipated magnitude of both the student and staff datasets.
The final instruments were comprised of both previously validated, and newly devised, items of specific cultural relevance to each respective cohort (students or staff), as appropriate. The case HEI’s Digital Marketing Unit was contacted to ascertain an appropriate online platform on which to host and disseminate the instruments. ‘Lime Survey’ (Version 2.05, Build 140217) was ultimately selected for this purpose and an administrator login linked to a special purpose email address was provided under the case HEI’s profile. This facilitated the dissemination of the respective instruments using the HEI’s template design (Appendix P). Lime Survey also enabled data to be directly exported to Microsoft Excel and ultimately to IBM® SPSS® statistical software package for further analysis. The decision to use an online platform removed any logistical limitations on sample size, as manual data entry was not required.

All items were created manually on the Lime Survey platform in the desired format (yes/no, free text, categorical with one answer option, categorical to tick all that apply, array/grid type questions for multi-item scales or Likert scale type options). Skip-logic was enabled on certain items to ensure that participants were only exposed to items of relevance. Skip logic also prevented those who reported an age of less than 18, as well as staff members who had already completed the student instrument (i.e., if they were current postgraduate candidates, as well as Staff members), from proceeding with the questionnaire. Therefore, although in total there were 92 and 70 ‘main’ items (exclusive of sub-items) inputted into the student and staff survey platforms, respectively (see Appendices N & O), not all participants were exposed to the same number of items. In both instruments, items were stratified into sections relating to a particular health domain, and all participants were exposed to the sections in the same sequential order, as outlined in Table 3.2. Where appropriate, common items were used across both the student and
staff instruments to facilitate dual-cohort comparisons in later phases of the research (Chapter 6).

Table 3.2 Overview of sections in student and staff questionnaire instrument

<table>
<thead>
<tr>
<th>Order sequence</th>
<th>Student instrument</th>
<th>Staff instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey welcome page</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1. About You</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. General Health</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Food Habits &amp; Nutrition</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4. Physical Activity</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5. Alcohol</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6. Tobacco &amp; Other Substances</td>
<td>✓</td>
<td>Tobacco only</td>
</tr>
<tr>
<td>7. Sexual Health</td>
<td>✓</td>
<td>N/A</td>
</tr>
<tr>
<td>8. Sleep &amp; Mental Health</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>9. Social Media</td>
<td>✓</td>
<td>N/A</td>
</tr>
<tr>
<td>10. Your Suggestions</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Details of relevant campus and external supports</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

As a seminal national study that investigated the health and wellbeing of undergraduate students in Ireland, many items were adapted from the College Lifestyle and Attitudinal National (CLAN) questionnaire instrument, which was provided by the CLAN lead author (Hope et al., 2005). Further items were sourced and/or adapted from subsequent research within an Irish university (Mac Neela et al., 2012; Mc Caffrey & Mac Neela, n.d.) and/or previous research conducted amongst the general Irish population as part of the national ‘SLÁN’ surveys (Morgan et al., 2008). All items comprised within the student and staff questionnaire instruments are outlined within Table 3.3 and Table 3.4, respectively. The specific thesis chapter(s) that encompass data derived from each item (if applicable), have also been indicated.
Table 3.3 Macro-level overview of the student questionnaire instrument, and the subset of relevant variables comprised within empirical chapters of this thesis

<table>
<thead>
<tr>
<th>Section</th>
<th>Variables measured</th>
<th>Adapted/Sourced from</th>
<th>Final Placement</th>
</tr>
</thead>
</table>
| **About You** | Sex, age, registration status, mode of study (full/part-time), area of study  
Primary campus, year of study  
Academic achievement for previous semester  
Living conditions during term time  
Socio-economic status (inferred from level of financial assistance received, if any)  
Nationality | Hope et al., 2005  
ND  
ND  
Mac Neela et al., 2012  
ND  
Hope et al., 2005 | Ch 4, Ch 6  
Ch 4  
Ch 4  
Ch 4  
Ch 4 |
| **General Health** | Self-rated general health (5-point Likert scale)  
Sources of health information  
Consultations with doctor/nurse/physio at case HEI’s medical centre during previous 12 months  
Self-reported height/body mass  
Self-perceived BMI category | Hope et al., 2005  
Hope et al., 2005 | Ch 4, Ch 6  
- | |
| **Food Habits & Nutrition** | Adherence to customised diet  
14-item Food frequency questionnaire (FFQ)  
Self-reported servings of fruit and vegetables per day  
Habitual breakfast patterns (no of days per week, and at weekend, that breakfast is typically consumed)  
Series of setting-specific items regarding availability, use, typically weekly expenditure within, and perceptions of, case HEI’s food environment | Hope et al., 2005  
Hope et al., 2005  
Mac Neela et al., 2012  
ND  
ND | -  
-  
Ch 4, Ch 6  
Ch 4  
Ch 6 |
| **Physical Activity** | Physical Activity Stages of Change for Exercise Behaviour Questionnaire  
Barriers to physical activity  
Sports participation  
Vigorous, Moderate and Light intensity physical activities undertaken during 7 days prior to survey (self-reported frequency and duration of each activity) | Marcus & Forsyth, 2003.  
Morgan et al., 2008  
Hope et al., 2005  
ND, based on IPSOS MRBI & Sport Ireland, 2016; Dept. | -  
Ch 4, Ch 6  
-  
Ch 4, Ch 6 |
<table>
<thead>
<tr>
<th>Category</th>
<th>Measurement</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Children &amp; HSE, 2009; Craig et al., 2003</td>
<td>Ch 4, Ch 6</td>
<td></td>
</tr>
<tr>
<td>Sitting time during college day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habitual gym attendance, interaction with campus PA facilities</td>
<td></td>
<td>ND</td>
</tr>
<tr>
<td>Interest in potential recreational physical activities offered under remit of the campus HP initiative</td>
<td></td>
<td>ND &amp; Hope et al., 2005 Ch 6</td>
</tr>
<tr>
<td>Free-text suggestions regarding recreational exercise offerings</td>
<td></td>
<td>ND</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Alcohol Use Disorders Identification Test (AUDIT)</td>
<td>Babor et al., 2001 Ch 4, Ch 6</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Age started drinking</td>
<td>Hope et al., 2005 Ch 4</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Alcohol related harms (own drinking)</td>
<td>Mc Caffrey &amp; Mac Neela, n.d. -</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Alcohol related harms (another’s drinking)</td>
<td>Mc Caffrey &amp; Mac Neela, n.d. -</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Readiness to Change Questionnaire</td>
<td>Heather &amp; Rollnick, 2000 -</td>
</tr>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>Current and previous tobacco smoking</td>
<td>Hope et al., 2005 Ch 4, Ch 6</td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>E-cigarette use</td>
<td>ND</td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>Lifetime pack history</td>
<td>CDC 2007; Morgan et al., 2008 -</td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>Intention regarding smoking</td>
<td>Hope et al., 2005 -</td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>Opinion regarding tobacco free campus policy</td>
<td>ND</td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>Lifetime use of marijuana/cannabis</td>
<td>Mc Caffrey &amp; Mac Neela, n.d. -</td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td>Lifetime use of illicit drugs</td>
<td>Hope et al., 2005 (terminology verified with local HSE HP unit) Ch 4</td>
</tr>
<tr>
<td>Sexual Health</td>
<td>Sexual orientation, sexual activity, age of first intercourse</td>
<td>Trinity College Survey for Sexual Health, cited in Hope et al., 2005 Ch 4</td>
</tr>
<tr>
<td>Sexual Health</td>
<td>Pregnancy prevention methods, STI protection methods, reasons for not using condoms</td>
<td></td>
</tr>
<tr>
<td>Sexual Health</td>
<td>Alcohol and/or drugs prior to last intercourse</td>
<td></td>
</tr>
<tr>
<td>Sexual Health</td>
<td>Pregnancy history</td>
<td></td>
</tr>
<tr>
<td>Sexual Health</td>
<td>Use of morning after pill</td>
<td></td>
</tr>
<tr>
<td>Sexual Health</td>
<td>Number of sexual partners</td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco &amp; Other Substances</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Sleep & Mental Health

- Sleep quality during previous 30 days
- Habitual sleep duration per nights during weekdays and at weekends
- Cohort specific stressors
- Self-rated mental health
- Energy and Vitality Index (EVI) and Mental Health Index-5 (MHI-5)

<table>
<thead>
<tr>
<th>Description</th>
<th>Source(s)</th>
<th>Chapter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep quality during previous 30 days</td>
<td>Single item adapted from Buysse et al., 1989</td>
<td>Ch 4, Ch 6</td>
</tr>
<tr>
<td>Habitual sleep duration per nights during weekdays and at weekends</td>
<td>Mac Neela et al., 2012</td>
<td>Ch 4, Ch 6</td>
</tr>
<tr>
<td>Cohort specific stressors</td>
<td>Hope et al., 2005</td>
<td>Ch 4</td>
</tr>
<tr>
<td>Self-rated mental health</td>
<td>Hope et al., 2005</td>
<td>Ch 4, Ch 6</td>
</tr>
<tr>
<td>Energy and Vitality Index (EVI) and Mental Health Index-5 (MHI-5)</td>
<td>Ware et al., 1993</td>
<td>Ch 4, Ch 6</td>
</tr>
</tbody>
</table>

### Social Media

- Habitual social media use patterns with particular reference to posting of alcohol-related content
- Potential interest in social media pages regarding recreational exercise/sport for fun at CIT

<table>
<thead>
<tr>
<th>Description</th>
<th>Source(s)</th>
<th>Chapter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitual social media use patterns with particular reference to posting of alcohol-related content</td>
<td>ND, based on Bickerdike et al., 2016</td>
<td>Ch 4</td>
</tr>
<tr>
<td>Potential interest in social media pages regarding recreational exercise/sport for fun at CIT</td>
<td>ND</td>
<td>-</td>
</tr>
</tbody>
</table>

### Your Suggestions

- Request for any comments or suggestions (free text box)

<table>
<thead>
<tr>
<th>Description</th>
<th>Source(s)</th>
<th>Chapter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request for any comments or suggestions (free text box)</td>
<td>ND</td>
<td>Ch 6</td>
</tr>
</tbody>
</table>

ND = newly devised
Table 3.4 Macro-level overview of the staff questionnaire instrument, and the subset of relevant variables comprised within empirical chapters of this thesis

<table>
<thead>
<tr>
<th>Section</th>
<th>Variables measured</th>
<th>Adapted/Sourced from</th>
<th>Final Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About You</strong></td>
<td>- Sex, age-category</td>
<td>Hope et al., 2005</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Nationality</td>
<td>Adapted based on categories found on case HEI website</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Job description</td>
<td>ND</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Any concurrent education (whether a current PG student of case HEI, for example)*</td>
<td>ND</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Length of service</td>
<td>ND</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Primary campus</td>
<td>ND</td>
<td>Ch 5, Ch 6</td>
</tr>
<tr>
<td></td>
<td>- Self-reported (i) contracted hours and (ii) 'actual' (inclusive of overtime) hours worked per week</td>
<td>ND</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Highest level of education</td>
<td>ND</td>
<td>Ch 5</td>
</tr>
<tr>
<td><strong>General Health</strong></td>
<td>- Self-rated general health</td>
<td>Hope et al., 2005; Morgan et al., 2008; Ware et al., 1993</td>
<td>Ch 5, Ch 6</td>
</tr>
<tr>
<td></td>
<td>- Self-rated quality of life</td>
<td>Morgan et al., 2008</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Last consultation with GP</td>
<td>Morgan et al., 2008</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Self-reported and diagnosed medical conditions within previous 12 months</td>
<td>Morgan et al., 2008</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Screening within last 12 months</td>
<td>Morgan et al., 2008</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>- Cardiovascular risk factors diagnosed within 12 months</td>
<td>CSO, 2016</td>
<td>Ch 5</td>
</tr>
<tr>
<td></td>
<td>- Days absent from work due to personal health problems in previous 12 months</td>
<td>ND</td>
<td>Ch 5, Ch 6</td>
</tr>
<tr>
<td></td>
<td>- Self-reported height/body mass</td>
<td>ND</td>
<td>Ch 5, Ch 6</td>
</tr>
<tr>
<td></td>
<td>- Self-perceived BMI category</td>
<td>ND</td>
<td>Ch 5, Ch 6</td>
</tr>
<tr>
<td><strong>Food Habits &amp;</strong></td>
<td>- 14-item Food frequency questionnaire (FFQ)</td>
<td>Hope et al., 2005</td>
<td>-</td>
</tr>
<tr>
<td><strong>Nutrition</strong></td>
<td>- Self-reported servings of fruit and vegetables per day</td>
<td>Mac Neela et al., 2012</td>
<td>Ch 5, Ch 6</td>
</tr>
<tr>
<td></td>
<td>- Series of setting-specific items regarding availability, use, typically weekly expenditure within, and perceptions of, case HEI’s food environment</td>
<td>ND</td>
<td>Ch 6</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Physical Activity Stages of Change for Exercise Behaviour Questionnaire Marcus &amp; Forsyth, 2003</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>▪ Barriers to physical activity Morgan et al., 2008</td>
<td>Ch 5, Ch 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Sports participation Hope, 2005</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Vigorous, Moderate and Light intensity physical activities undertaken during 7 days prior to survey (self-reported frequency and duration of each activity) ND, based on IPSOS MRBI &amp; Sport Ireland, 2015; Dept. Health and Children &amp; HSE, 2009; Craig et al., 2003</td>
<td>Ch 5, Ch 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Sitting time during working day ND</td>
<td>Ch 5, Ch 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Habitual gym attendance, interaction with campus PA facilities ND &amp; Hope et al., 2005</td>
<td>Ch 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Interest in potential recreational physical activities offered under remit of the campus HP initiative ND</td>
<td>Ch 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Free-text suggestions regarding recreational exercise offerings ND</td>
<td>Ch 6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Alcohol | Alcohol Use Disorders Identification Test (AUDIT) # Babor et al., 2001 | Ch 5 |
| ▪ Readiness to Change Questionnaire Heather & Rollnick, 2000 | - |

| Tobacco | Current and previous tobacco smoking Hope et al., 2005 | Ch 5 |
| ▪ E-cigarette use ND | - |
| ▪ Lifetime pack history CDC, 2007; Morgan et al., 2008 | Ch 5 |
| ▪ Cigarettes per day (current smokers) ND | - |
| ▪ Intention regarding smoking Hope et al., 2005 | - |
| ▪ Opinion regarding tobacco free campus policy ND | - |

| Sleep & Mental Health | Sleep quality during previous 30 days Single item adapted from Buysse et al., 1989 | Ch 5, Ch 6 |
| ▪ Habitual sleep duration per nights during weekdays and at weekends Mac Neela et al., 2012 | Ch 5, Ch 6 |
| ▪ Self-rated mental health Hope et al., 2005 | Ch 5, Ch 6 |
| ▪ Energy and Vitality Index (EVI) and Mental Health Index-5 (MHI-5) Ware et al., 1993 | Ch 5, Ch 6 |
| ▪ Perceived Stress Scale (short form) Cohen et al., 1983 | Ch 5 |
| ▪ 4 items from the Job Satisfaction Subscale of COPSOQ questionnaire Kristensen et al., 2005; National Research Center for Work Environment, 2007 | Ch 5 |
| ▪ Perception of work-life balance ND | Ch 5 |

| Your Suggestions | Request for any comments or suggestions (free text box) ND | Ch 6 |

ND = newly devised, * Exclusion criteria applied, and survey was ceased if participants reported having already completed the student instrument, # 9 items of the full AUDIT instrument plus 1 adapted item, all three items of the AUDIT-C subscale were included.
As evident within both Table 3.3 and Table 3.4, variables (i) of most relevance to the overarching aim of the current research (which is to serve as a baseline needs assessment), and (ii) that strategically align with similar Irish cross-sectional research for comparative purposes (Conry et al., 2011; Davoren et al., 2015; Hope et al., 2005; Morgan et al., 2008) were prioritised for inclusion within the relevant empirical studies. Nevertheless, the domain-specific scales and/or intricate domain items that were purposively included within each instrument, but not comprised within the scope of the current analyses, will constitute pertinent baseline comparative datasets for the purposes of future cohort or intervention studies.

Notable validated scales that were utilised in the current research include the Alcohol Use Disorders Identification Test (AUDIT) which is a screening instrument used to identify harmful and/or problematic drinking patterns (Babor et al., 2001). Items 1 to 3 constitute a ‘hazardous drinking’ sub-scale (AUDIT-C), and this sub-scale formed a critical component of both the student (Study One, Chapter 4), and staff (Study Two, Chapter 5) questionnaire instruments to determine the prevalence of hazardous drinking amongst both cohorts. Possible AUDIT-C scores range from 0 (non-drinkers) to a maximum score of 12, with higher scores indicative of more hazardous drinking. In Study One (Chapter 4), sex-specific threshold AUDIT-C scores of ≥6 for male and ≥5 for female students were used to classify hazardous drinking, which was consistent with the thresholds applied by Davoren and colleagues (2015) in a study of 2,275 undergraduate students in a HEI in Ireland (Davoren et al., 2015). In Study Two (staff, Chapter 5), and Study Three (student-staff comparisons, Chapter 6), a standardised threshold score of ≥6 was utilised, in line with previous Irish research involving a representative sample of the general population (Conry et al., 2011). The validity and reliability of both the AUDIT, and the
AUDIT-C subscale are well established (Reinert & Allen, 2007). Notably, Barry et al. (2015) reported high (i) concurrent validity (relative to objective breath alcohol concentration), (ii) internal consistency (Cronbach’s alpha 0.76) and (iii) stability (positive correlations using split-half reliability analysis) of the AUDIT-C amongst a sample of 347 HEI students in the USA.

In terms of mental health and wellbeing, the Energy and Vitality Index (EVI) and Mental Health Index-5 (MHI-5) were critical components of both the student and staff instruments to measure positive (EVI) and negative (MHI-5) mental health symptomatology, respectively (Ware et al., 1993). Of note, these psychometric indices have been encompassed within the ‘Healthy Ireland’ surveys amongst the general population (IPSOS MRBI & Dept. of Health, 2016a), and have also been used in previous Irish research involving HEI student cohorts (Houghton et al., 2010; Mac Neela et al., 2012).

As subscales of the SF-36 Health Survey (Ware et al., 1993), both the EVI and MHI-5 require participants to recall the previous four weeks and indicate (on a six-point Likert scale ranging from ‘none of the time’ to ‘all of the time’) the frequency with which they experienced a specified affect or emotion. In Study One and Study Two, the items of the EVI enquired how often participants felt (i) ‘full of pep’, (ii) that they had ‘a lot of energy’, (iii) ‘worn out’, and (iv) ‘tired’. In the MHI-5, participants reported how often they were (i) ‘a nervous person’, (ii) ‘down in the dumps’, (iii) ‘calm and peaceful’, (iv) ‘downhearted and blue’, and (v) ‘a happy person’. In its totality, the reliability and validity of the SF-36 instrument has been confirmed in a sample of 800 Irish adults (Blake et al., 2000). More recently, both the MHI-5 and EVI exhibited high reliability (Cronbach’s
alpha of 0.84 and 0.82, respectively) in a sample of 841 undergraduate students who participated in the NUIG Student Lifestyle Survey (Mac Neela et al., 2012).

In Chapter 2, an accumulating body of empirical literature indicating high levels of occupational stress amongst HEI staff cohorts was discussed, and this further substantiated the inclusion of the short-form of Cohen’s Perceived Stress Scale (Cohen et al., 1983) within the staff instrument in Study Two (Table 3.4). On this four-item measure, staff recalled the ‘past month’ and indicated (on a 5-point Likert scale ranging from ‘never’ to ‘very often’) how frequently they felt (i) ‘unable to control the important things in (their) life’, (ii) ‘confident about (their) ability to handle personal problems’, (iii) like ‘things were going (their) way’, and (iv) that ‘difficulties were piling up so high that (they) could not overcome them’. Using standardised coding (including reverse-coding of items 2 and 3), possible Short Form PSS scores ranged from 0-16, with higher scores indicative of greater perceived stress (Cohen et al., 1983). The short form variant of the scale (‘PSS-4’) was utilised in preference to the full 10-item version, given the substantial length of the current staff instrument. High internal consistency of the PSS-4 has been previously demonstrated (Cronbach’s alpha of 0.77) in a study involving 1,484 participants (aged 16 to 85) in a community-based skills training programme in England (Warttig et al., 2013).

3.2.3 Dissemination of the Student Questionnaire Instrument

Inclusion criteria extended to all registered students (≥18 years old) of the case HEI during the 2015/16 academic year. This approach was in alignment with the ‘whole-HEI’ paradigm of the Healthy University/Healthy Campus ethos (Healthy Ireland, 2021b),
whereby all students were provided with an equal opportunity to participate to inform the campus HP initiative. A database of all registered students (N=11,261) was imported into the Lime Survey system directly by the case HEI’s Digital Marketing Department Unit. Survey platform settings were anonymised, meaning that there was no identifiable link between the imported database and the acquired database of survey responses. Access to the questionnaire instrument was via a unique ‘token’ for each participant. In line with similar research involving HEI student cohorts (Hope et al., 2005; Kunttu & Pesonen, 2013), completion of the student web-based instrument was incentivised with entry into a draw to win an Apple iPad ®.

With regard to selecting an appropriate time period for data collection, collecting data in the semester two period facilitated reporting of semester one academic results within the student instrument (Table 3.3). An email containing a direct hyperlink to the questionnaire was sent to all 11,261 institutional student email addresses on April 20th 2016. This email described the purpose and scope of the research, and the nature of the questionnaire; while it also assured the proposed cohort that participation was anonymous and voluntary. Participants could also ‘opt-out’ of any further correspondence, if desired. The questionnaire remained accessible for a 23-day period and was deactivated on the final day of the Semester (May 13th). A total of three reminder emails were sent to students who had not completed the questionnaire at days 7, 14, and 20, respectively. The survey was subsequently reactivated for a 7-day period (June 7th-14th inclusive) following the cessation of the HEI’s examination schedules. Due to the anonymised survey setting, specific dates/times of completion were not recorded for individual participants.
3.2.4 Dissemination of the Staff Instrument

A similar data collection protocol was implemented to disseminate the staff instrument, and all staff of the case HEI (who had not already participated in the student study) were deemed eligible to participate. A centrally compiled database of institutional email addresses, from which generic accounts that could be accessed by several individuals (such as email addresses pertaining to campus services and/or functions) were excluded, was uploaded to the Lime Survey platform. Survey settings were entirely anonymised, and this database was entirely separate from, and could not be linked in any way to, anonymised survey responses.

In contrast to the student cohort, completion of the staff questionnaire instrument was not incentivised. The instrument was disseminated via institutional email to 1,705 addresses on June 10th 2016. This email outlined the purpose and scope of the research, and contained a direct and individualised hyperlink to the questionnaire. The questionnaire instrument remained accessible from June 10th-24th 2016. Whilst both ‘Academic’, and ‘Professional Management Support Staff (PMSS)’, were eligible to participate, this period was specifically selected as a time when academic staff were not teaching, and it was hypothesised they would have greater time and availability to participate. Two reminder emails were distributed to staff who had not completed the instrument at day 5 (June 15th) and day 11 (June 21st) of the data collection period. At all stages, staff could elect to ‘opt out’ of further email communications.
3.2.5 Data Cleaning and Analysis

Fully anonymised questionnaire data were stored on the Lime Survey platform and exported both as CSV/Microsoft Excel files and to IBM Statistical Package for the Social Sciences (SPSS) for data cleaning and subsequent analysis (Version 22.0 until 15th October 2018 after which the researcher’s laptop was upgraded and Version 25.0 was installed). Blank datasets were removed from the SPSS master files at the outset (n=121 from the student dataset, and n=26 from the staff dataset).

For both datasets, data cleaning commenced with a manual review of all variables to denote, via distinct coding, whether missing data points were attributable to (i) skip-logic (and therefore ‘valid’), (ii) a single missed item, or (iii) a participant ceasing the survey prematurely and hence failing to answer any further items. Numeric outlier values were reviewed and discussed. In the case of certain variables, such as self-reported height and body mass, self-report data leading to biologically implausible values (for example, BMI >60.0 kg/m² and/or BMI <14.0 kg/m²) were removed. Where necessary, extreme outliers were discussed and reviewed on a case-by-case basis by the postgraduate researcher and the Supervisory Team to arrive at a mutual consensus.

Both Microsoft Excel and SPSS were used for data analysis, with all related statistical analyses described within the respective quantitative chapters (Chapters 4-6). In summary, categorical data were explored and analysed by performing relative frequencies stratified by sex. Numeric data were tested for normality and subsequently described using either means/standard deviation, and/or median/interquartile ranges as appropriate. Between-category differences in specific health parameters/behaviours were investigated using Chi Squared tests of independence (for categorical variables), Mann-Whitney U
Tests and/or Kruskall Wallis Tests (given the non-parametric distribution of continuous variables). As described in Study One (Chapter 4) and Study Two (Chapter 5), all relative frequencies (categorical data) and/or preliminary descriptive statistics were expressed relative to the valid number of responses to the relevant item, and pairwise comparisons were used for all statistical analyses.

Validated scales and subscales, such as the AUDIT-C, EVI, and MHI-5, were scored as per the relevant instruction manuals (Babor et al., 2001; Ware et al., 1993). Raw EVI and MHI-5 scores were mathematically transformed using the standardised formula, to yield a score of 0-100 on each scale (Ware et al., 1993), with higher scores indicating more favourable mental health. Body Mass Index (BMI) was calculated from self-reported height and body mass values (mathematically converted to metric units as applicable) using the standard formula: 
\[
\frac{\text{mass (kg)}}{(\text{height (m)})^2}.
\]
BMI categories were defined according to World Health Organisation criteria; <18.5 kg/m\(^2\)=underweight, 18.5-24.9 kg/m\(^2\)= normal weight, 25.0-29.9 kg/m\(^2\)= overweight, and ≥30.0 kg/m\(^2\)= obese (WHO, 2010).

As outlined within both Study One (Chapter 4) and Study Two (Chapter 5), physical activity (PA) volume (minutes/week) was calculated from participants’ self-reported frequency and duration of light, moderate, and vigorous-intensity PA activities, during the 7 days prior to data collection (frequency x duration = volume). The calculated volume of moderate and vigorous PA were then combined and reviewed to determine whether the recommended volume of ≥150 minutes of moderate intensity PA was attained (dichotomised to either meeting, or not meeting the guidelines). Notably, in accordance with the Irish Physical Activity Guidelines (Dept. of Health & HSE, 2009; Healthy
Ireland & Dept. of TTAS, 2016), 1 minute of vigorous intensity PA was deemed to constitute 2 minutes of ‘moderate equivalents’ in these analyses.

Further analyses, such as a multiple linear regression procedure to identify significant predictors of students’ positive mental health (Study One), and a two-step cluster analytical procedure to examine for either healthy and/or sub-optimal clustered patterns in the health and lifestyle metrics of staff (Study Two), are described within Chapter 4 (Bickerdike et al., 2019) and Chapter 5 (Bickerdike et al., 2022), respectively.

3.3 Phase Two: Transitional Phase

3.3.1 Design

Whilst Phase One encompassed detailed, cohort-specific analyses (Bickerdike et al., 2019, 2022), a series of common items were purposively included within both the student and staff questionnaire instruments to enable meaningful comparisons between cohorts (Table 3.3, Table 3.4). Phase Two was comprised of a socio-ecological descriptive case study (Study Three, Chapter 6), which aimed to comparatively analyse the health metrics and perceptions reported by students and staff during Phase One, and to consider these data as outcomes of interactions with, and within, the case HEI. From a quantitative perspective, it is pertinent to note that the student and staff datasets were not directly merged, given that the data collection periods were not wholly concurrent. However, quantitative comparisons were derived from consistently coded common items within both the student and staff datasets, from which two novel indices were derived.
3.3.2 Health Risk Index

To compare overall co-occurrence of health ‘risks’ amongst students and staff, a subset of ten items common to both instruments were selected and dichotomised within each cohort’s master dataset to generate ten new variables. Each of these variables were coded as either a ‘risk’ (1) or ‘non-risk’ (0). The 10 variables of relevance have been outlined and further described within Study Three (Chapter 6, Table 6.1).

To quantify the co-occurrence of health risk, a ‘health risk index’ (HRI) was then calculated based on the cumulative scores across the ten dichotomised variables (possible HRI range from 0 to 10). Descriptive statistics performed on the common collection of variables were used to infer macro-level comparisons between students and staff Table 6.5. To conduct further ‘within-cohort’ analyses, HRI scores were first tested for normality (within each dataset) using a Kolmogorov-Smirnov test, and were deemed to be non-parametrically distributed amongst both students and staff. Therefore, a Mann-Whitney U test was subsequently performed within each dataset to investigate whether HRI scores differed significantly by sex, and/or by campus (dichotomised to either ‘Primary Central Campus [PCC]’ or ‘Satellite Campus’).

‘Hazardous drinking’, measured by the AUDIT-C scale, constituted a key ‘risk’ metric comprised within the HRI variables. In order to standardise the classification of drinking behaviours amongst both cohorts, and hence to conduct meaningful comparisons between students and staff, an AUDIT-C threshold score of ≥6, previously applied in Irish research amongst the general population (Conry et al., 2011), was applied to both datasets.
In addition, scores on the EVI and MHI-5 were also dichotomised to constitute two variables within the HRI. Similar to the 2016 ‘Healthy Ireland’ survey, both students and staff were deemed to exhibit ‘negative mental health’ (and hence a ‘risk’) if they reported a score of $\leq 56$ on the MHI-5 (IPSOS MRBI & Dept. of Health, 2016a). The threshold used to constitute ‘positive mental health’ was exhibiting an EVI score of at least one standard deviation above the respective cohort’s mean (IPSOS MRBI & Dept. of Health, 2016a). Based on mean EVI scores calculated separately for both students and staff, the threshold EVI scores applied within each dataset to constitute ‘positive mental health’ were $\geq 66.0$ amongst students (n=1532 valid EVI scores, mean 46.0 ± SD 20), and $\geq 77.7$ amongst staff (n=229 valid EVI scores, mean 58.7 ± SD 19). Students and staff who did not attain these thresholds were considered to exhibit a lack of energy/vitality, which was coded as a ‘risk’ within the dichotomised EVI variable.

### 3.3.3 Health Perceptions Index

As an overarching index of participants’ fundamental self-rated metrics, a ‘Health Perceptions Index’ (HPI), was also derived within both the student and staff datasets, based on cumulative scores on three items that were included within both questionnaire instruments (self-rated mental health, general health, and recent sleep quality). These items were self-rated by participants on a 5-point Likert scale ranging from ‘very poor’ (1) to ‘very good’ (5). The HPI, therefore, ranged from 3 to 15, with higher scores indicative of more favourable perceptions.
3.3.4 Interactions with the Case HEI’s Built Environment

As described in greater detail within Study Three (Chapter 6), descriptive statistics were performed on a series of common items embedded within both the student and staff instruments to compare each cohort’s habitual interactions with the case HEI’s (i) food and beverage facilities, and (ii) PA facilities.

3.3.5 Qualitative Methods

As outlined in Table 3.3 and Table 3.4, the final item within each survey instrument was a ‘free-text’ option inviting participants to share perspectives, and/or further suggestions to inform the campus HP initiative. Study Three (Chapter 6) incorporated a comparative qualitative analysis of the contributions of both students and staff, using inductive thematic coding. Additional qualitative data within Study Three also included a desk review of relevant documentation pertaining to the operational structures of the case HEI, in addition to internal records regarding the cumulative PA provision within the case HEI’s built environment (inclusive of area measurements [m²]).

3.4 Phase Three: Qualitative Phase

3.4.1 Design

As the final thread of sequential investigation, Phase Three was comprised of two qualitative studies (Study Four; Chapter 7, and Study Five; Chapter 8) that were derived from a single data corpus. Given the diversity, complexity and multiple hierarchal structures within the case HEI setting itself, the use of qualitative methods was considered integral to ensure that this research adopted a participatory ethos to meaningfully engage
with the campus community. Qualitative study designs have also been proposed as particularly amenable to the investigative process to (i) capture the complexity of lived experiences, (ii) derive theoretical hypotheses, and (iii) constitute a medium through which to highlight and/or advocate on behalf of vulnerable groups and/or specific societal issues (Thyer, 2012).

3.4.2 Sampling and Participant Recruitment

A non-probabilistic, purposive sampling strategy was employed. This was informed by a campus HP stakeholder mapping exercise, which has been outlined within Chapter 1 of this thesis, and previously disseminated elsewhere (Bickerdike et al., 2018). Table 3.5 summarises the target population of purposively identified participants for this phase of the research, and their proportional representation within the final sample. The nomenclature used to denote each stakeholder stratum within the sample is also indicated, to further aid the interpretation of Study Four (Chapter 7) and Study 5 (Chapter 8).

During October and November 2021, the target population were contacted by email with a request to participate in a remote semi-structured interview (IV), or focus group (FG) session, as applicable. Whilst recruitment emails were personalised to either the target group (FG) or individual (IV) where relevant, consistent templates were used to structure these requests. The initial email explained the purpose and scope of the research, and included a detailed Participant Information Sheet (Appendices Q & S). All participants were provided with the opportunity to ask questions, and provided informed consent for the IVs and FGs to be audio-visually recorded (Appendix R & T).
Table 3.5 Target population for the qualitative phase of the current research (Study Four and Study Five)

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Target Population (N)</th>
<th>Final Sample (n)</th>
<th>Response Rate</th>
<th>Stakeholder ID code within Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semi-structured Interviews (IV)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive Management</td>
<td>4</td>
<td>4</td>
<td>100%</td>
<td>IV Executive Management</td>
</tr>
<tr>
<td>Senior Management (HoDs)</td>
<td>3</td>
<td>3</td>
<td>100%</td>
<td>IV Senior Academic (HoD)</td>
</tr>
<tr>
<td><strong>Professional, Management, Support Staff (PMSS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMSS Senior Management</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>IV PMSS Senior Management</td>
</tr>
<tr>
<td>SU Presidents</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>IV PMSS</td>
</tr>
<tr>
<td>Welfare and Support Services</td>
<td>5</td>
<td>3</td>
<td>50%</td>
<td>IV PMSS</td>
</tr>
<tr>
<td>Sport and/or Societies</td>
<td>3</td>
<td>2</td>
<td>66%</td>
<td>IV PMSS</td>
</tr>
<tr>
<td>Campus environment</td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td>IV PMSS</td>
</tr>
<tr>
<td><strong>External HP stakeholders</strong></td>
<td>2</td>
<td>1</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td><strong>IV Total</strong></td>
<td>23</td>
<td>16</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td><strong>Focus Groups (FG)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty 1 (HoDs)</td>
<td>4</td>
<td>2*</td>
<td>50%</td>
<td>FG Senior Academic HoD</td>
</tr>
<tr>
<td>Faculty 2 (HoDs)</td>
<td>10</td>
<td>3</td>
<td>30%</td>
<td>FG Senior Academic HoD</td>
</tr>
<tr>
<td>Faculty 3 (HoDs)</td>
<td>7</td>
<td>1</td>
<td>14% (did not proceed)</td>
<td>FG Senior Academic HoD</td>
</tr>
<tr>
<td>Mixed HOF/HOS</td>
<td>8</td>
<td>3</td>
<td>37.5%</td>
<td>FG Senior Management</td>
</tr>
<tr>
<td>Undergraduate Class Representatives #</td>
<td>Unknown</td>
<td>2*</td>
<td>Unknown</td>
<td>FG Current UG Student</td>
</tr>
<tr>
<td>Postgraduate Student ‘Expert’ Group~</td>
<td>4</td>
<td>4</td>
<td>100%</td>
<td>FG Current PG Student &amp; UG Alumni</td>
</tr>
<tr>
<td>Students’ Union Officers</td>
<td>5</td>
<td>4</td>
<td>80%</td>
<td>FG SU Officer</td>
</tr>
<tr>
<td><strong>FG Total</strong></td>
<td>Unknown</td>
<td>18</td>
<td>Unknown</td>
<td></td>
</tr>
</tbody>
</table>

HoD: Head of Dept, HoF: Head of Faculty, HoS: Head of School, * Proceeded as a dyad; # no direct access to UG class representatives’ database, recruitment email disseminated via a central administrator, total target N unknown; ~ postgraduate students and case HEI undergraduate alumni with both UG and PG exposure to HP/health-related discipline(s)
Verbal consent to record was also reiterated at the beginning of each IV or FG, and participants were informed of their right to cease the IV/FG at any time, and/or to refrain from engaging with any particular discussion item.

3.4.3 Semi-Structured Interviews

Semi-structured IVs constitute a suitable qualitative method to gather data relating to a pre-defined research question, whilst also encompassing the inherent flexibility to enable a participant to recount personal experiences and perspectives (Rabionet, 2011). In the current research, a tailored, semi-structured IV script was developed (see Table 3.6). This indicative guide encompassed a series of items that were specifically designed to explore participants’ perspectives, and/or lived experiences, in relation to:

i. Their personal definitions of health, and their perceptions regarding the rationale for HP within society, and specifically within the higher education sector

ii. The context, culture, and characteristics of the case HEI as a HP setting

iii. Their awareness and perceptions of ‘A Healthy MTU’ (formerly ‘A Healthy CIT’) as a campus HP entity

iv. The ecological validity of the quantitative metrics reported by students and staff during earlier phases of this research, with respect to their lived experiences within the HEI
Table 3.6 Semi-structured IV indicative script

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
<th>Indicative Script</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Section 1: Introduction, purpose, context and re-establish consent to record</strong></td>
</tr>
<tr>
<td>1</td>
<td>Core</td>
<td>▪ What is your current role at MTU?</td>
</tr>
<tr>
<td>1A</td>
<td>Prompt</td>
<td>▪ How long have you been in this role?</td>
</tr>
<tr>
<td>1B</td>
<td>Prompt</td>
<td>▪ Can you tell me a little about your professional background to date? (Previous roles within MTU, specific interests)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Section 2: Background/contextual questions</strong></td>
</tr>
<tr>
<td>2</td>
<td>Core</td>
<td>▪ What does being 'healthy' mean to you?</td>
</tr>
<tr>
<td>2A</td>
<td>Prompt</td>
<td>▪ When you think of 'healthy living’ what comes to your mind?</td>
</tr>
<tr>
<td>3</td>
<td>Core</td>
<td>▪ Do you think that promoting health is of any value to society? (If yes, why &amp; how?) / (If no, why not?)</td>
</tr>
<tr>
<td>4</td>
<td>Core</td>
<td>▪ Do you think universities should try to influence population health? If yes, why, and in what way(s)? If no, why?</td>
</tr>
<tr>
<td>5</td>
<td>Core</td>
<td>▪ On a scale of 1-5, with 1 being ‘no intervention/laissez faire’ and 5 being ‘extreme interventionism’, where would you place universities in terms of how much they should enable healthy behaviours?</td>
</tr>
<tr>
<td>6</td>
<td>Core</td>
<td>▪ In your opinion, what would a ‘healthy university’ look like?</td>
</tr>
<tr>
<td>7</td>
<td>Core</td>
<td>▪ Who, if anybody, is directly responsible for promoting health at MTU?</td>
</tr>
<tr>
<td>8</td>
<td>Core</td>
<td>▪ Do you feel that health falls within the duties of your specific role? (If so, enquire further)</td>
</tr>
<tr>
<td>9</td>
<td>Core</td>
<td>▪ (If applicable) On a personal level, does working in MTU benefit or hinder your health?</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Section 3: HEI setting &amp; culture</strong></td>
</tr>
<tr>
<td>10</td>
<td>Core</td>
<td>▪ What are the facilitators of positive health here at MTU (i.e., ‘what do we do well here’)?</td>
</tr>
<tr>
<td>11</td>
<td>Core</td>
<td>▪ What are the barriers to positive health at MTU (i.e., ‘what could we improve on’)?</td>
</tr>
<tr>
<td>12</td>
<td>Core</td>
<td>▪ Do you think there has been an organisational commitment to health and wellbeing? (If yes, describe. If no, why not?)</td>
</tr>
</tbody>
</table>
### Section 4: Health challenges, final perspectives on HP practice

| 13 | Core | ▪ What health and wellbeing initiative(s) or policies are you aware of at MTU? |
| 14 | Core | ▪ What, (if anything), do you know about the initiative ‘A Healthy CIT’ or ‘A Healthy MTU’? |
| 14A | Prompt | ▪ (If yes) Have you participated in, or promoted any, of the activities under the remit of ‘A Healthy CIT’ in the past? Why or why not? |
| 14B | Prompt | ▪ (If yes) What was your opinion of this initiative(s)? |
| 15 | Core | ▪ What initiative(s) or policies would you like to see a reformatted ‘A Healthy MTU’ implement in future? |
| 16 | Core | ▪ Do you think that funding a programme such as ‘A Healthy MTU’ is justified? Why or why not? |
| 16A | Prompt | ▪ (If yes) Who should fund it? What would such a funding model look like? What budget would you allocate? (As appropriate) |
| 16B | Prompt | ▪ (If no) Where do you think that funding should be directed instead? |
| 17 | Core | ▪ In your role as (insert role here) what would you see as the most relevant metrics/outputs/deliverables to evaluate a funded programme such as ‘A Healthy MTU’? |
| 18 | Prompt | ▪ (If applicable) Would you be willing to participate in a Steering Committee that would oversee the activities of ‘A Healthy MTU’ in the future? Why or why not? |

**Share screen and display (i) common health challenges (Figure 3.1) and HP 'pillars' model (Figure 3.2)**

| 19 | Core | ▪ What do you feel are the primary health challenges faced by MTU students? (Enquire further if relevant) |
| 19A | Prompt | ▪ (If prompt required) such as specific health challenges, societal changes, further issues and/or trends? |
| 20 | Core | ▪ What do you feel are the primary health challenges faced by MTU staff? (Enquire further if relevant) |

This slide shows some of the health and wellbeing challenges identified amongst students and staff. I will give you a moment to take a look at this, and then perhaps you might share any initial reactions? If not, no problem we’ll move on.

This slide shows our previously proposed ideal model of HP on the right, vs. the current position on the left. I will give you a moment to take a look at this, and then perhaps you might share any initial reactions? If not, no problem we’ll move on.

| 23 | Core | ▪ Is there anything else you would like to revisit or add? |
The indicative script, and full IV protocol were piloted via Zoom (August 30th and September 1st 2021) with two Academic Staff within the case HEI (one male, and one female). Both pilot participants were domain experts (to PhD level) in HP, and were thus suitably positioned to offer both theoretical and experiential feedback in terms of the design, breadth, and validity of the script. Within the final post-pilot script, ‘core’ items were further supplemented by optional probing items and/or prompts, where applicable and appropriate (Table 3.6). As indicated within Table 3.6 and Table 3.7, two visual prompts were included, which were displayed during the final phase of both the IVs (and FGs) using the ‘Share Screen’ feature. These prompts served to invite and elicit perspectives regarding (i) baseline data gathered during earlier quantitative phases of the research, and the ecological context to same (Figure 3.1), and (ii) current HP practice and structures within the case HEI (Figure 3.2), based on a preliminary operating concept that was previously disseminated elsewhere (Bickerdike et al., 2018).

![MTU Cork ('CIT') Student & Staff Challenges](Figure 3.1 Common health-related challenges, as presented during Phases One & Two of this research (Bickerdike et al., 2019, 2022)
All IVs were conducted remotely between October 2021 and February 2022 using a licensed ‘Single Sign On’ (SSO) Zoom account, linked to the HEI institutional staff credentials of the postgraduate researcher. Participants were provided with a unique meeting hyperlink. Appropriate security settings were enabled for each remote IV session, such as a ‘waiting room’ feature and a requirement for each participant to authenticate either their SSO HEI Zoom credentials (internal participants) and/or a personal authenticated Zoom account (external participants). For the purposes of identity verification and enabling a natural flow of conversation, participants were requested to turn their cameras on for the duration of the IV.
Table 3.7 FG (and/or Dyadic IV) indicative script

<table>
<thead>
<tr>
<th>Item</th>
<th>FG Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Purpose, context and reiterate consent to record</td>
</tr>
<tr>
<td>Core</td>
<td>(If required) What is your name, and role? (or area of study as appropriate)</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
</tr>
<tr>
<td>1 Core</td>
<td>When you think of 'healthy living', or 'being healthy', what comes to your mind?</td>
</tr>
<tr>
<td>2 Core</td>
<td>Do you think that promoting health is of any value to society? (If yes, why &amp; how) / (If no, why not?)</td>
</tr>
<tr>
<td></td>
<td>Transition</td>
</tr>
<tr>
<td>3 Core</td>
<td>Do you think universities should try to influence population health? Enquire further; if yes, why and in what way (s)? If no, why not?</td>
</tr>
<tr>
<td>4 Core</td>
<td>Zoom Poll: On a scale of 1-5 with 1 being ‘no intervention/laissez faire’ and 5 being ‘extreme interventionism’, where would you place universities in terms of how much they should enable healthy behaviours? (Enquire further here as applicable)</td>
</tr>
<tr>
<td>5 Core</td>
<td>(If applicable) Does working in MTU benefit or hinder your health?</td>
</tr>
<tr>
<td></td>
<td>Key</td>
</tr>
<tr>
<td>6 Core</td>
<td>In your opinion, what would a healthy university look like?</td>
</tr>
<tr>
<td>7 Core</td>
<td>What, (if anything), do you know about the initiative ‘A Healthy CIT’?</td>
</tr>
<tr>
<td>8 Core</td>
<td>Do you feel that health falls within the duties of your specific role as …….? If so, probe further</td>
</tr>
<tr>
<td>9 Core</td>
<td>In your role as (ROLE) what are the facilitators of positive health here at MTU (i.e., ‘what do we do well here’?)</td>
</tr>
<tr>
<td>10 Core</td>
<td>In your role as (ROLE) what are the barriers to positive health at MTU (i.e., ‘what could we improve on’?)</td>
</tr>
<tr>
<td>10A Prompt</td>
<td>Are there any supports, policies or initiatives that you would like to see implemented HP perspective?</td>
</tr>
<tr>
<td></td>
<td>Share screen and show participants (i) common health challenges (Figure 3.1), and HP 'pillars' model (see Figure 3.2)</td>
</tr>
<tr>
<td>11 Core</td>
<td>This slide shows some of the health and wellbeing challenges identified amongst students and staff. I will give you a moment to take a look at this, and then perhaps you might share any initial reactions? If not, no problem we’ll move on.</td>
</tr>
<tr>
<td>12 Core</td>
<td>This slide shows our proposed ideal model of HP on the right, vs. the current position on the left. I will give you a moment to take a look at this, and then perhaps you might share any initial reactions? If not, no problem we’ll move on.</td>
</tr>
<tr>
<td></td>
<td>Ending</td>
</tr>
<tr>
<td>13 Core</td>
<td>Is there anything else you would like to add or suggest?</td>
</tr>
</tbody>
</table>
3.4.4 Focus Groups

A similar data collection protocol was followed to implement FGs which were conducted remotely via the same SSO licenced HEI Zoom platform between November 2021 and January 2022. An indicative FG guide was developed, and purposively comprised of a selected sub-set of items concurrently included within the IV script. As indicated within Table 3.7, in accordance with previous recommendations outlined by Krueger and Casey (2001), a purposive sequential design was adopted, whereby items were stratified into phases commencing with a generic introduction, before narrowing in scope to encompass both ‘transition’ and ‘key’ phases (Table 3.7). In addition to the visual prompts as described above (Figure 3.1 and Figure 3.2), FGs also incorporated an interactive Zoom poll (Table 3.7, item 4) to promote interactive engagement and to elicit overarching perspectives in relation to the perceived role, if any, of HEIs in contemporary HP practice. The FG protocol was piloted in September 2021 with 3 postgraduate students, and a staff member (PMSS) within the case HEI.

3.4.5 Qualitative Data Analysis

The final qualitative data corpus comprised of 16 IVs and 6 FGs (n=18 participants). However, as described within both Study Four (Chapter 7) and Study Five (Chapter 8), two of the intended FG sessions were ultimately implemented as dyads (Table 3.5) due to the low response rates amongst some strata, in addition to further administrative barriers in terms of scheduling, and securing direct access to a database of undergraduate class representatives.
A preliminary transcript file and an audio-visual recording were generated by the Zoom platform for all IVs and FGs. Audio-only files were extracted and used to derive a verbatim, anonymised transcript for each IV/FG. The preliminary transcription verification process was contributed to by 6 independent researchers for reliability, and a final review of all transcripts was completed by the postgraduate researcher. Raw transcript data were imported into the NVivo (Release 1.6.1) software package for further analyses, which were implemented through a dual-phase ‘inductive-deductive’ protocol (Figure 3.3). In the first phase, inductive thematic coding was conducted on the data corpus in its entirety, in accordance with the seminal recommendations of Braun and Clarke (2006). This yielded 152 initial codes, which were subsequently reviewed, merged, or collapsed to derive the preliminary inductive thematic structure, as schematically depicted in Figure 3.3. A document outlining this preliminary thematic structure was independently reviewed by both members of the Project Supervisory (SV) Team for reliability and validity. Following discussions to arrive at a consensus, two distinct deductive approaches were subsequently applied to the preliminary themes, from which Study Four (Chapter 7) and Study 5 (Chapter 8) were derived. This derivation was an iterative process, and preliminary drafts were reviewed independently by the Project SVs. Study Four aimed to investigate the lived experiences of participants to inform a triangulated model of the determinants of health and wellbeing, with the deductive paradigm rooted in Dahlgren and Whitehead’s Socioecological Model of the Determinants of Health (Dahlgren & Whitehead, 1991, 2021). Study Five pertained to campus HP structures and practice, with final themes deductively analysed with respect to the constructs of the international ‘Healthy University’/’Health Promoting University’ principles (Dooris et al., 2014; Dooris et al., 2010), in addition to the Irish Healthy Campus Framework (Healthy Ireland, 2021b).
Inductive coding of all data items, n=352 preliminary codes from which the initial thematic structure was derived as follows:

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-theme(s)</th>
<th>Final placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio cultural influences</td>
<td>• Irish culture and societal norms</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Socioeconomic divides and inequalities</td>
<td>Ch 7 T1, Ch 7 T4</td>
</tr>
<tr>
<td></td>
<td>• Legislative and regulatory influences</td>
<td>Ch 8 T1</td>
</tr>
<tr>
<td>HE sectoral determinants of health and wellbeing</td>
<td>• Intrinsic links between the HE sector and health</td>
<td>Ch 8 T1</td>
</tr>
<tr>
<td></td>
<td>• Change within the HE sector</td>
<td>Ch 7 T1</td>
</tr>
<tr>
<td>Culture and psyche of the case HEI</td>
<td>• External recognition and value</td>
<td>Ch 8 T1</td>
</tr>
<tr>
<td></td>
<td>• Collective loyalty to the organisation</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Vocational aspect to higher education roles</td>
<td>Ch 7 T2</td>
</tr>
<tr>
<td></td>
<td>• Implicit role modelling within the organisation</td>
<td>Ch 7 T2</td>
</tr>
<tr>
<td></td>
<td>• Collegiality, communication and supportive relationships within the host</td>
<td>Ch 7 T2</td>
</tr>
<tr>
<td></td>
<td>HEI community</td>
<td>Ch 7 T2</td>
</tr>
<tr>
<td></td>
<td>• Flexible and caring ethos</td>
<td>Ch 7 T2</td>
</tr>
<tr>
<td></td>
<td>• Culture within diverse academic departments</td>
<td>Ch 7 T2</td>
</tr>
<tr>
<td>Structures and processes within HEI</td>
<td>• Workloads and lack of time</td>
<td>Ch 7 T4</td>
</tr>
<tr>
<td></td>
<td>• Teaching and learning, academic programmes</td>
<td>Ch 7 T4</td>
</tr>
<tr>
<td></td>
<td>• Internal barriers, frustrations, organisational structures</td>
<td>Ch 7 T4</td>
</tr>
<tr>
<td>Campus built environment</td>
<td>• Built environment as a visual reflection of culture and ethos</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Physical Activity Provision</td>
<td>Ch 7 T3</td>
</tr>
<tr>
<td></td>
<td>• Food Environment</td>
<td>Ch 7 T3</td>
</tr>
<tr>
<td></td>
<td>• Lack of a quiet or a ‘safe space’ on campus</td>
<td>Ch 7 T3</td>
</tr>
<tr>
<td>Lived experience of the campus population</td>
<td>• Personal definitions of health</td>
<td>Ch 7 T1</td>
</tr>
<tr>
<td></td>
<td>• Specific domains and health related challenges</td>
<td>Ch 7 T1</td>
</tr>
<tr>
<td></td>
<td>• Cohort specific experiences and contexts</td>
<td>Ch 7 T1</td>
</tr>
<tr>
<td></td>
<td>• Reactions to health-related challenges identified in research</td>
<td>Ch 8 T10</td>
</tr>
<tr>
<td>Campus health promotion practice: challenges, perceptions and needs</td>
<td>• Rationale for campus health promotion (HP)</td>
<td>Ch 8 T1</td>
</tr>
<tr>
<td></td>
<td>• Perceptions and visions of a Healthy HEI setting</td>
<td>Ch 8 T5</td>
</tr>
<tr>
<td></td>
<td>• Prior exposure to, and awareness of [Campus HP initiative]</td>
<td>Ch 8 T6</td>
</tr>
<tr>
<td></td>
<td>• Operational model, governance and funding of campus HP activities</td>
<td>Ch 8 T7</td>
</tr>
<tr>
<td></td>
<td>• Tone and reach of HP messaging</td>
<td>Ch 8 T8</td>
</tr>
<tr>
<td></td>
<td>• Population recommendations for delivery of [Campus HP initiative]</td>
<td>Ch 8 T9</td>
</tr>
</tbody>
</table>

Figure 3.3. Summary of the inductive-deductive qualitative analyses employed to derive Study Four (Chapter 7), and Study Five (Chapter 8)
3.5 Ethical Approval and Considerations

All phases of this research were designed in accordance with the Declaration of Helsinki. The research protocol was reviewed and approved by the Research Ethics Committee (REC) of the (former) Cork Institute of Technology, prior to data collection (see Appendix L). As evidenced throughout this chapter, and given the inherent sensitivity of the subject matter, preservation of participants’ anonymity was prioritised across all phases of the research.

In Phase One, both the student and staff web-based questionnaire instruments were entirely anonymised, and data were recorded using a numeric identifier that was generated automatically within the survey platform. Although many items within the questionnaire instruments used within Phase One were adapted from previous Irish research (Hope et al., 2005; Mac Neela et al., 2012; Morgan et al., 2008), the indicative content of the questionnaire was outlined within an initial ‘landing page’, from which participants could either elect to progress to the instrument and/or simply exit the platform. As an additional safeguarding measure, details of both campus-based, and ‘out of hours’, health and welfare supports were comprised within each respective instrument (Table 3.1).

Within the qualitative phase of the research, prospective participants were contacted individually by email, and provided with a detailed information sheet (Appendices Q & S), which emphasised that participation was entirely voluntary. Informed consent to the audio-visual recording of either an IV and/or FG session was provided (Appendices R & T). Verbal consent was also re-established prior to commencing any recorded sessions, and participants were advised of their right to withdraw at any time, or to refrain from
discussing a particular item. When reporting on this these qualitative data, all explicit
and/or potentially indirect demographic identifiers were removed from methodological
descriptions (section 3.5.2), and from all sections of each respective empirical study
(Chapter 7 and Chapter 8).
Chapter 4

‘A Healthy CIT’: An Investigation into Student Health Metrics, Lifestyle Behaviours and the Predictors of Positive Mental Health in an Irish Higher Education Setting

Andrea Bickerdike *, Joan Dinneen and Cian O’Neill

Published in: International Journal of Environmental Research and Public Health

Appendix C
4.1 Abstract

**Authors:** Andrea Bickerdike, Joan Dinneen, Cian O’Neill

Higher Education Institutions (HEIs) are potent health promotion settings, uniquely positioned to aid societal efforts to combat non-communicable diseases (NCDs). International evidence suggests that health metrics and lifestyle behaviours of higher education students are sub-optimal, yet a dearth of contemporary Irish data exists. This study aimed to examine sex differences in student lifestyle behaviours and identify significant predictors of positive mental health in an Irish HEI setting. An online questionnaire instrument distributed to all registered students (n=11,261) gathered data regarding a multitude of health and lifestyle domains. Many items were adapted from previous Irish research. Further validated scales included the Alcohol Use Disorders Identification Test (AUDIT), Mental-Health Index 5 (MHI-5) and the Energy and Vitality Index (EVI). Self-reported height/body mass were also recorded. In total, 2,267 responses (20.1% response rate) were analysed (51.7% female, 48.3% male). Both sexes demonstrated poor sleeping patterns, hazardous drinking and sub-optimal fruit and vegetable intake. The calculated prevalence of overweight/obesity was 38.2%. Both sexes underestimated obesity. Males underestimated and females overestimated overweight. Males displayed riskier behavioural patterns with regard to illicit substances, drinking, and sexual partners. Females reported greater psychological distress. Multiple linear regression identified 8 variables as predictors of positive mental health, accounting for 37% of the variance in EVI scores. In conclusion, HEI students would benefit from sex-specific multi-level health promotion initiatives to remove macro-level barriers to healthier lifestyles.

**Keywords:** university students; health; gender; health promotion; health behaviours; lifestyle; healthy universities; BMI; mental health
4.2 Introduction

Unhealthy lifestyles increase the risk of non-communicable diseases (NCDs) such as cardiovascular disease, respiratory disorders, diabetes, and cancers (WHO, 2014). In 2016, NCDs accounted for 71% of worldwide deaths and 91% of population deaths in Ireland (WHO, 2018a). Due to the deleterious physiological and economic effects of NCDs, enabling healthy behaviours throughout the lifespan is a fundamental priority of the Irish Government’s health promotion strategy (Dept. of Health, 2013).

In this regard, higher education may constitute a cost-effective setting for the implementation of health education initiatives (Wang et al., 2009). It is a uniquely transitional life stage where a multitude of lifestyle behaviours and social experiences are interwoven within the culture and built environment of a single Higher Education Institution (HEI) setting (Hunt & Eisenberg, 2010). However, financial scarcity and academic stressors (El Ansari, Stock, Snelgrove, et al., 2011) experienced within a newly autonomous environment can result in students engaging in risk-taking behaviours (El Ansari, Stock, John, et al., 2011) that are associated with the quintessential ‘college lifestyle’.

In addition, the ‘Freshman 15’ (an alleged weight gain of 15 pounds or 6.8 kg during a student’s first year of higher education) has remained a widely cited phenomenon, despite a lack of objective verification (Hoffman et al., 2006). A recent international meta-analysis incorporating data from 5,549 higher education students across North America, the United Kingdom and Belgium reported that the overall mean gain in body mass was 3 pounds (1.36 kg), 60.9% of students gained at least some weight and 9.3% gained the postulated ‘freshman 15’ (Vadeboncoeur et al., 2015). In a general context, the volume
of studies reporting increases in students’ body mass during the first year of higher education (Bodenlos et al., 2015; de Vos et al., 2015; Finlayson et al., 2012; Kelly & Latner, 2015; Serlachius et al., 2007) constitutes a worrying physiological trajectory.

Similarly, detrimental trends in body composition have also been observed over the course of a four-year academic programme in a USA university, with significant increases in students’ Body Mass Index (BMI), body fat percentage and total fat mass values (Gropper et al., 2012). Using BMI as an indicator of adiposity, a study investigating overweight/obesity among HEI students across seven European countries reported prevalence ranges of between 4.6% (Bulgaria) to 18% (Denmark) among females and 12% (Lithuania) to 27.3% (Germany) among males (Mikolajczyk et al., 2010). This study also highlighted generalised misperceptions of anthropometric status; male students classified themselves as too thin whereas females perceived themselves as excessively fat (Mikolajczyk et al., 2010).

HEI students also appear to exhibit sub-optimal dietary behaviours as evidenced by inadequate intake of fruit and vegetables (El Ansari, Stock, John, et al., 2011; Hilger et al., 2017; Keller et al., 2008; Opoku-Acheampong et al., 2018; Papadaki et al., 2007; Unusan, 2006) and habitual consumption of fast food during a typical week (Driskell et al., 2006; Hope et al., 2005; Morse & Driskell, 2009). In particular, students who move away from home appear to consume fewer home-cooked meals (Papadaki et al., 2007). Reported breakfast consumption patterns have been variable between studies. A German study reported that just over one quarter did not regularly (defined as 4–5 per week) eat breakfast (Hilger et al., 2017), whereas research conducted in the USA reported that 38.7% of students consumed breakfast less than five times per week (Nelson et al., 2008).
The transition from school to university may also be a time where students become less physically active, particularly those who move residence (Diehl & Hilger, 2016). In the work of Diehl and Hilger (2016), 45.4% of a sample of 689 HEI students in Germany reported that their overall physical activity volume had decreased at university, relative to their final years in secondary education. It appears that eating and physical activity behaviours are influenced by both personal motivations and self-regulation, further complexified by the unique barriers interwoven within the campus environment and social constructs of the college lifestyle (LaCaille et al., 2011).

Hazardous drinking habits have been widely documented among HEI students in Ireland (Davoren et al., 2015), the United Kingdom (Bewick et al., 2008; Heather et al., 2011), Belgium (Lannoy et al., 2017), Australia (Hallett et al., 2012), New Zealand (Connor et al., 2010; Kypri et al., 2002), North America (Zakletskaia et al., 2010), and South Africa (Maphisa & Young, 2018). In addition, although the exact prevalence of drug use among young people is difficult to establish due to a scarcity of objective studies (Quintela et al., 2000), illicit substance misuse has been reported among cohorts of higher education students, both in terms of prescription medications (Bennett & Holloway, 2017) as well as recreational substances (Hope et al., 2005; Quintela et al., 2000). In terms of sexual health, a casual ‘hook-up’ culture has been reported, with students displaying a lack of concern regarding their vulnerability to sexually transmitted infections (Downing-Matibag & Geisinger, 2009).

Psychologically, inherent stressors such as extensive academic workloads, scarce finances and uncertainty regarding the future are ingrained within the very nature of the higher education experience (Beiter et al., 2015). Previous research has reported the
prevalence of psychosomatic symptoms such as fatigue (59.7%), headaches (57.8%) and back pain (42.7%) among a cohort of higher education students (El Ansari, Stock, Snelgrove, et al., 2011). Psychological wellbeing may be further attenuated by poor sleep quality (Becker et al., 2018) which can be a normative aspect of university life (Barone, 2017).

From a wider socio-cultural perspective, technological advances and the emergence of mobile technologies over the past number of years may have influenced contemporary student lifestyle behaviours and parameters of wellbeing. For example, smartphone use may be associated with poorer sleep quality in a relationship mediated by depression and anxiety (Demirci et al., 2015), and internet addiction has emerged as a health concern among first year university students in Turkey (Orsal et al., 2013). Social media has become ingrained within the lives of many young adults (Moreno & Whitehill, 2014) and exposes users to alcohol-related content and advertising (Moreno et al., 2016).

Traditionally, studies pertaining to student lifestyles have emphasised a particular health domain or behaviour (Keller et al., 2008). However, it has been previously argued that health-related behaviours should not be studied in isolation but as collections that can cluster in favourable or unfavourable patterns (Dodd et al., 2010). In addition, it is possible that institution/university-specific clustering of either ‘health-promoting’ or ‘health-damaging’ indicators exist, hence the need to establish setting-specific profiles from which to guide campus health promotion programmes (El Ansari, Stock, Snelgrove, et al., 2011). Pragmatically, sectoral discourse pertaining to the mental health and wellbeing of HEI students (Karwig et al., 2015), further compounded by extant constraints on support services (Macaskill, 2013), substantiates the rationale for the
application of a more holistic analytical perspective to investigate the concurrent associations between overall collective lifestyle patterns, and students’ wellbeing. Such an approach could constitute a prudent sub-component within a broader, ecological, ‘settings-based’ ‘Healthy University’ paradigm (Dooris et al., 2010; Okanagan Charter, 2015) to inform and evaluate health-enhancing positivist interventions to support students.

Demographically, sex differences in the lifestyle behaviours of higher education students have been elicited. Males have been shown to be more physically active (Dodd et al., 2010; El Ansari, Stock, John, et al., 2011; Keller et al., 2008; Moreno-Gómez et al., 2012; Varela-Mato et al., 2012), however greater levels of illicit drug use have also been reported (Hope et al., 2005). Females have consistently reported greater levels of psychological stress (Dodd et al., 2010; El Ansari, Stock, Snelgrove, et al., 2011; Hope et al., 2005), but have also exhibited a tendency to consume more portions of daily fruit and vegetables (Dodd et al., 2010; El Ansari, Stock, John, et al., 2011). Interestingly, traditionally accepted sex differences in drinking patterns may have changed with recent Irish research reporting a greater prevalence of hazardous drinking among females (Davoren et al., 2015).

It is evident that in any effort to describe the contemporary lifestyle patterns of higher education students, sex must be considered as a demographic covariate. Secondly, lifestyles must also be considered within the cultural context of the HEI setting. Finally, ongoing research is required to document student lifestyle patterns over time. In Ireland, a designated longitudinal programme of research was recommended following the worrying lifestyle trends identified by a nationally representative study of undergraduate
students (Hope et al., 2005). However, such a multi-setting programme of research was never implemented, and a relative dearth of contemporary data exists.

The purpose of the current study was to explore a series of student health parameters and lifestyle behaviours within a medium-sized HEI in southern Ireland. Specific objectives focused on (i) the examination of sex-related differences across a number of health and lifestyle domains, and (ii) the identification of significant lifestyle predictors of positive mental health. Findings will be utilised to identify pertinent action areas for a new campus health promotion initiative (*A Healthy CIT*) and will be of interest to policy makers in similar institutions elsewhere.

4.3 Materials and Methods

4.3.1 Study Design

*A Healthy CIT* is a campus health promotion initiative at Cork Institute of Technology (CIT) that aims to maximise the health and wellbeing of all students and staff. Launched in 2016, the initiative endeavours to integrate a consideration for health and wellbeing into all aspects of the Institute’s operations, in accordance with the recommendations of the Okanagan Charter for Health Promoting Universities and Colleges (2015). *A Healthy CIT* encompasses a designated research arm within CIT’s Department of Sport, Leisure and Childhood Studies to strategically guide its future development and evaluation. Development and pilot activities are described in further detail elsewhere (Bickerdike et al., 2018).
Data included in this study were collected as part of baseline research activities; a cross-sectional web-based health survey conducted during Semester Two (Spring) of a standard academic year. All registered students of the Institute, aged 18 and over, were eligible to participate. The study was conducted in accordance with the Declaration of Helsinki, and the protocol and questionnaire instrument were approved by the Research Ethics Committee of the host institution prior to data collection.

4.3.2 Questionnaire Instrument

A questionnaire instrument was developed consisting of 92 main items pertaining to a series of health and lifestyle domains (demographics, general health, food habits and nutrition, physical activity, alcohol, tobacco and drug use, sexual health, sleep patterns, mental health, and social media use). Many items were adapted from previous Irish research (Hope et al., 2005; Mac Neela et al., 2012; Mc Caffery & Mac Neela, n.d.; Morgan et al., 2008) to facilitate retrospective comparisons. The instrument was hosted on an online platform (‘Lime Survey’). Skip-logic exposed participants only to relevant items based on their previous responses. Variables included in the current analyses were:

- **Demographics**: sex, age, nationality, year of study, National Framework of Qualifications (NFQ) level (‘undergraduate/taught postgraduate/postgraduate by research’), mode of study (‘full time student/ part time or evening student’) and area of study (later recoded by Faculty). These items were in line with previous Irish research (Hope et al., 2005; Mac Neela et al., 2012; Mc Caffery & Mac Neela, n.d.).

- **Academic achievement** during the preceding semester was self-reported on a categorical item reflecting the Institute’s grade bands (less than 40% / 40-59% /
Self-reported general health was measured using a single item adapted from previous Irish research (Hope et al., 2005; Morgan et al., 2008) (‘In general, would you say your health is’) with answers on a 5-point Likert Scale: (1) ‘very poor’, (2) ‘poor’ (3) ‘neither poor nor good’ (4) ‘good’ (5) ‘very good’. ‘Poor’ and ‘very poor’ categories were later combined for analysis.

Body Mass Index [BMI] was calculated from self-reported height (‘What is your estimated height?’) and body mass (‘What is your estimated current weight?’) using the standard formula: 

\[
\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height}^2 (m^2)}
\]

BMI weight categories were defined according to World Health Organisation criteria; <18.5 kg/m² = underweight, 18.5–24.9 kg/m² = normal weight, 25.0–29.9 kg/m² = overweight and ≥ 30.0 kg/m² = obese (WHO, 2010).

Self-perceived weight category was measured with a single categorical item (‘Which general category do you feel best describes you?’). Participants selected either ‘underweight’, ‘normal weight’, ‘overweight’ or ‘obese’.

Daily fruit and vegetable servings were self-reported (‘How many servings of fruit and/or vegetables do you eat on average every day?’). A reference description of a serving was provided as ‘3 dessert spoons of vegetables or 1 piece of fruit’ (Mac Neela et al., 2012).

Habitual breakfast consumption was measured with two items pertaining to consumption during the week (‘How many days during the week do you normally eat breakfast?’) and at weekends (‘How many days at the weekend do you normally eat breakfast?’). Participants were required to self-report numerical values from 0–5 (weekdays) or 0–2 (weekends).
• **Barriers to physical activity** were elicited with a single categorical item sourced from previous Irish research (Morgan et al., 2008) (‘What would you say is the main reason why you are not (more) physically active at this time?’). Participants were provided with seven potential barriers, as well as the option to specify an additional ‘other’ barrier. A ninth barrier (‘I feel that I may be taking too much exercise or overtraining’) was added to this item specifically for the current study.

• **Physical activities (type) during the 7 days prior to survey participation** were elicited using three newly-devised items each pertaining to (i) light, (ii) moderate and (iii) vigorous intensity activities respectively. These items were formulated based on the structure of the International Physical Activity Questionnaire (Craig et al., 2003) and previous Irish research (Hope et al., 2005). For each item, participants were provided with a reference description of the relative intensity. A list of activities and popular sports was then provided, based on sample activities listed in the Irish physical activity guidelines (Dept. of Health and Children & HSE, 2009) as well as the 2015 report of the Irish Sports’ Monitor (IPSOS MRBI & Sport Ireland, 2016). Participants were instructed to select all sporting, routine or occupational activities (if any) that they had participated in.

• **Physical Activity (volume) during the 7 days prior to survey participation** was quantified using a newly-devised item that required participants to enter (i) the frequency and (ii) duration (in minutes) of each session of light, moderate and vigorous physical activity undertaken (if applicable). This enabled the calculation of total volume of each respective category in minutes per week (frequency x duration). The primary variable of interest was whether students were sufficiently physically active according to Irish National Physical Activity Guidelines for adults (Dept. of Health and Children & HSE, 2009). A participant was deemed to
have met the guidelines if their combined volume of vigorous and moderate activity reached a threshold of 150 minutes of moderate intensity activity. For the purposes of these calculations, 1 minute of vigorous intensity activity was considered to be equivalent to 2 minutes of moderate intensity activity, as outlined in the aforementioned Irish National Physical Activity Guidelines document (Dept. of. Health and Children & HSE, 2009).

- **Daily sitting time** was measured with a newly devised ordinal item (‘During an average day at college for you, how many hours do you usually spend sitting down? For example, sitting at a desk, driving a car, sitting in a lecture etc.’) with a 6-point scale ranging from ‘less than 1 hour’ to ‘more than 5 hours’.

- **Alcohol consumption patterns** were evaluated using the Alcohol Use Disorders Identification Test (AUDIT), a validated 10-item instrument to detect problem drinking (Babor et al., 2001). Possible scores range from 0 to 40 with scores between 8–15 warranting advice regarding reduction of hazardous drinking, scores between 16 and 19 suggestive of problem drinking and scores of 20 or more justifying further evaluation for dependence on alcohol (Babor et al., 2001; Heather et al., 2011). The instrument is comprised of a series of subdomains specifically measuring hazardous alcohol use (also referred to as the ‘AUDIT-C’ scale) (items 1–3), dependence symptoms (items 4–6) and harmful alcohol use (items 7–10).

- **Tobacco smoking** items were sourced from previous Irish research (Hope et al., 2005; Mac Neela et al., 2012), and elicited current smoking status ‘Do you smoke tobacco now?’, with answer options being ‘no’, ‘yes regularly’ or ‘yes occasionally (usually less than 1 per day’).
- **Cannabis/marijuana use** was measured using the following item; ‘On how many occasions, if any, have you used marijuana (grass, pot) or cannabis (hash, hash oil)?’ (Mac Neela et al., 2012). Frequency of use was reported on a 7-point Likert scale (never, once or twice, 3–5 times, 6–9 times, 10–19 times, 20–39 times, 40 times or more) with three separate sub-items to distinguish between (i) lifetime use, (ii) use within the 12 months prior to the survey and (iii) use within the 30 days prior to the survey.

- **Illicit Substance use** was measured by providing participants with a list of recreational substances (plus their colloquial street names). For each substance, they were requested to report their frequency of use on a 4-point Likert scale (‘never’, ‘yes but not in past 12 months’, ‘once or twice in the past 12 months’, ‘3 or more times in the past 12 months’). This item was adapted directly from previous research (Hope et al., 2005) with the addition of ‘head-shop products’. The accompanying street names were verified by consultation with local addiction services of the Irish Health Service Executive. The Likert scale was later dichotomised (lifetime use yes/no) for analysis by sex.

- **Sexual health** items were sourced from the Trinity College Survey for Sexual Health, as cited in previous Irish research (Hope et al., 2005). Items elicited sexual orientation, sexual activity status, age of first intercourse, use of drugs and/or alcohol prior to previous intercourse, methods of sexually transmitted infection (STI) protection, history of STI diagnosis, morning-after pill use and (self-reported) total number of sexual partners.

- **Self-rated mental health** was measured with a single item (‘How would you rate your own mental health?’) (Hope et al., 2005) with an identical 5-point response scale as outlined for general health above.
• **Positive and negative mental health** were measured using the Energy and Vitality Index (EVI) and the Mental Health Index-5 (MHI-5) respectively, both of which are subscales of the Short-Form Health Survey (SF-36) (Ware et al., 1993).

• **Psychological stress** was evaluated with an item from previous Irish research that listed 11 stressors of specific relevance to this cohort (issues such as academic workload, finances and relationships plus an option to select ‘other’) (Hope et al., 2005). One additional stressor was included (‘social media’) for the current study. Participants were requested to indicate their perception of each stressor on a four-point scale (‘highly stressed’, ‘often stressed’, ‘not often stressed’ or ‘never stressed’).

• **Recent sleep quality** was self-reported on a single item (‘During the past 30 days, how would you rate your sleep quality overall?’) with identical 5-point response scale as outlined for general and mental health ratings above. This item was adapted from the sleep quality component of the Pittsburgh Sleep Quality Index (Buysse et al., 1989).

• **Habitual sleep duration** was measured with an item that asked participants to quantify their sleep duration (‘On average, how much sleep do you get?’) both on weekdays and at the weekends (Mac Neela et al., 2012). Answers were provided on a 7-point Likert scale ranging from ‘less than 4 hours’ to ‘9 hours or more’.

• **Social media** items ascertained the platforms used, as well as the average time spent on social media on weekdays and at weekends. These items were adapted from previous Irish research involving a cohort of medical students (Bickerdike et al., 2016). Further newly devised items established whether pictures were posted within 30 days of the survey and if so, whether such pictures were alcohol-related (oneself or another consuming or being around alcohol).
4.3.3 Survey Implementation and Data Collection Procedure

In line with previous research (Hope et al., 2005; Kunttu & Pesonen, 2013), the survey was incentivised with entry into a draw to win an iPad. An initial email invitation, containing a direct hyperlink to the questionnaire was distributed to 11,261 registered CIT student email addresses. This email described the purpose and scope of the study, nature of the questionnaire and assured all participants that participation was voluntary and responses were fully anonymised. Participants could also ‘opt-out’ of any further correspondence, if desired, and those who opted out received no further contact. The survey remained accessible for a 23-day period. A total of three reminder emails were sent to all those who had not completed the questionnaire at days 7, 14 and 20, respectively. The survey was reactivated for a 7-day period following cessation of the Institute’s end of semester examinations.

4.3.4 Statistical Analysis

Data were exported directly to Microsoft Excel (Microsoft Inc., Redmond, WA, USA) and IBM Statistical Package for the Social Sciences [SPSS] Version 25.0 (IBM Inc., Armonk, NY, USA). Data cleaning encompassed a review of all variables to examine the nature of outlier values and missing data. In the current paper, data are presented relative to the number of valid responses received to each applicable item; for the purpose of regression analyses, a ‘pairwise’ method of exclusion was applied.

Categorical data were analysed by establishing relative frequencies. Where applicable, specified responses initially placed within the ‘other’ category were re-coded to the relevant categorical option. Missing data points due to survey skip logic were excluded.
from the relative frequencies reported within each health domain but included as valid (coded 0) for three specific variables in the linear regression model (outlined further below). Numeric data were described using means/standard deviations or median/interquartile ranges as appropriate. Sex differences were elicited using Chi Squared Tests for Independence (for categorical variables) and Mann Whitney U Tests as applicable. Alpha level of significance was set at 0.05.

Physical activity volume was derived based on reported frequency and duration during the 7 days prior to data collection, as outlined above. Self-reported height and body mass values were first mathematically converted (where necessary) from imperial values to metric equivalents and then used to determine BMI. Cohen’s Kappa was calculated to ascertain the relative level of agreement between calculated and perceived BMI category. Validated scales were scored as per relevant instruction manuals.

Multiple linear regression was used to identify significant predictors of positive mental health, with EVI scores as the dependant variable. Independent categorical variables were dichotomised as outlined below. Initial independent variables included as predictors were sex (0=male, 1=female), age, having a ‘good’ or ‘very good’ general health perception (dichotomised as 0=no, 1=yes), habitual daily fruit and vegetable servings, adjusted physical activity volume (moderate and vigorous only, as described above), AUDIT-C scores, tobacco smoking (0=no, 1=yes), lifetime cannabis/marijuana use (0=never or less than 20 times, 1=at least 20 times or more), ‘good’ or ‘very good’ sleep quality (0=no, 1=yes), ‘good’ or ‘very good’ mental health perception (0=no, 1=yes) using social media for at least 90 minutes per day Mon-Fri (0 = no or not applicable, 1 = yes), lifetime use of ecstasy (0=no, 1=yes), calculated BMI, self-perceived weight category (0=underweight
or normal weight 1=overweight/obese), sitting time (0=up to 4 hours, 1=4 hours or more) and number of sexual partners. In terms of missing data points due to survey skip logic, non-drinkers (n=182) were included as having an AUDIT-C score of ‘0’, those not sexually active (n=189) included as having ‘0’ sexual partners, and those without an active account (n=56) included as spending ‘0’ daily minutes on social media. Only the independent variables that displayed a statistically significant influence in the initial model were included in the final model.

4.4 Results

4.4.1 Response Rate and Student Demographics

In total, 2,390 responses (21.2% response rate) were recorded on the LimeSurvey platform (www.limesurvey.org). Blank datasets (n=121) were removed, and two spoiled datasets were excluded at a later stage, leaving 2,267 cases (20.1% total response rate). Mean completion time recorded by the survey platform was 18.7 minutes. Due to the substantial length of the questionnaire, there was a progressive decline in responses observed as well as variability in response numbers to each item. A total of 1,541 participants proceeded to the final section of the questionnaire (68.0% of initial sample retained, 13.7% overall response rate). Individual item valid response rates ranged from a maximum of 100% (n=2,267) to a minimum of 63.9% (n=1449).

Just over fifty-one percent (51.7%) of those who initially responded were female (n=1,173) and 48.3% were male (n=1,094). Reported ages ranged from a minimum of 18 to a maximum of 65 years old however the majority (68.9%, n=1560) were aged between 18 and 23. There was no significant association between sex and progressing to the final
section of the questionnaire instrument \[\chi^2 (1, n=2,267) =0.64, \ p=0.43 \text{ Phi } 0.02\]. Table 4.1 presents each demographic variable by sex.

**Table 4.1 Demographic characteristics of participants by sex.**

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<th>Demographic Variable</th>
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<th>p-Value *</th>
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<tr>
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Year Group (postgraduates)

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<td><strong>108</strong></td>
<td><strong>96</strong></td>
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Nationality

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<th>Irish #</th>
<th>1,937</th>
<th>89.2</th>
<th>954</th>
<th>91.0</th>
<th>983</th>
<th>87.5</th>
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<td>UK</td>
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<td>16</td>
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<td>14</td>
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<td>Other European #</td>
<td>141</td>
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<td>4.6</td>
<td>93</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>64</td>
<td>2.9</td>
<td>30</td>
<td>2.9</td>
<td>34</td>
<td>3.0</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>2.172</strong></td>
<td><strong>1.048</strong></td>
<td><strong>1.124</strong></td>
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Academic Achievement (undergraduates only)

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<tr>
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<th>Less than 40%</th>
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<th>0.6</th>
<th>6</th>
<th>0.6</th>
<th>5</th>
<th>0.5</th>
<th><strong>0.02</strong></th>
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<tbody>
<tr>
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<td>40–59% #</td>
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<td>23.9</td>
<td>253</td>
<td>27.2</td>
<td>211</td>
<td>20.9</td>
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<tr>
<td></td>
<td>60–69%</td>
<td>766</td>
<td>39.5</td>
<td>357</td>
<td>38.3</td>
<td>409</td>
<td>40.6</td>
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<tr>
<td></td>
<td>70% or above</td>
<td>491</td>
<td>25.3</td>
<td>226</td>
<td>24.3</td>
<td>265</td>
<td>26.3</td>
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<tr>
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<td>6.1</td>
<td>87</td>
<td>8.6</td>
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<tr>
<td>Declined to Provide this Information</td>
<td>63</td>
<td>3.2</td>
<td>32</td>
<td>3.4</td>
<td>31</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,940</strong></td>
<td><strong>931</strong></td>
<td><strong>1,008</strong></td>
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</tbody>
</table>

* Chi Squared Test for Independence across all response categories (continuity correction applied for 2 × 2 tables), ~ collapsed continuous age variable, ** recoded based on students’ reported area of study, # significant within-variable category differences between male/female proportions based on multiple comparisons with Bonferroni adjustment to p-value.
4.4.2 Health and Lifestyle Parameters

General Health and Body Mass Index [BMI]

The majority (78.6% n=1,667) of participants rated their general health as either ‘good’ or ‘very good’, 15.8% (n=336) rated it as ‘neither poor nor good’ and 5.6% (n=118) as ‘poor/very poor’. Males reported a more favourable perception of their general health than females [$\chi^2$ (3, n = 2,121 =20.4, p<0.0005, Cramer’s V=0.01].

Body Mass Index [BMI] calculations (n=1,990) classified 11.0% as ‘obese’, 27.2% ‘overweight’, 58.4% ‘normal weight’ and 3.3% ‘underweight’. Absolute BMI values of male students were significantly greater than female values (Median [Md]. 24.3 vs. 23.5 kg/m$^2$), $U = 441280.0$, $z = -4.18$, p<0.0005, r = 0.09.

There was a statistical association between sex and self-perceived BMI category [$\chi^2$ (3, n= 2,069) = 60.2, p < 0.0005, Cramer’s V = 0.17] with a greater proportion of females classifying themselves as ‘overweight’ (31.2% vs. 22.5%) or ‘obese’ (4.1% vs.1.9%) in comparison to males. Figure 4.1 and Figure 4.2 depict the sex-stratified distribution of both perceived and calculated BMI categories for those who provided all necessary data. The Kappa measure of agreement value between perceived and calculated BMI categories was 0.41, p<0.0005 (females: 0.50, males 0.32).
Figure 4.1 Perceived versus calculated BMI category classifications (females, n=996). Kappa Measure of Agreement 0.50, p<0.0005.

Figure 4.2 Perceived versus calculated BMI category classifications (males, n=974). Kappa Measure of Agreement 0.32, p < 0.0005.
Food Habits and Nutrition

The median number of servings of fruit and vegetables per day was 3.0 (IQR ± 3.0). Females (Md. 3.0, Mean Rank 1057.33, n=1,046) reported significantly more daily servings than males (Md. 3.0, Mean Rank 954.75, n=969, U=455185.5, z=−4.01, p<0.0005, r=0.09). In relation to breakfast patterns, 62.2% (n=1,241) reported a habitual breakfast consumption pattern of five weekday mornings (Mon-Fri) and 73.9% (n=1,466) usually consumed breakfast on each of the two weekend mornings (Sat-Sun). There was no significant association between sex and weekday \[\chi^2 (5, n=1,996) =7.2, p=0.20, \text{Cramer’s V}=0.06\] or weekend \[\chi^2 (2, n=1,984) =1.9, p=0.39, \text{Cramer’s V}=0.03\] breakfast consumption.

Physical Activity and Sedentary Time

A significantly greater proportion of males reached the recommended physical activity guidelines during the 7 days prior to data collection (74.8% vs. 67.8%) \[\chi^2 (1, n=1,480) =8.5, p=0.003, \text{phi}=−0.08\]. ‘Personal exercise/gym activities’ were the most commonly reported vigorous physical activities undertaken during this period for both males (42.7%, n=371) and females (38.7%, n=354). In relation to moderate intensity activities, males most commonly cited ‘light jogging’ (40.3%, n=350) followed by ‘walking for transport’ (37.6%, n=327). The two most popular activities reported by females were ‘walking for transport’ (53.6%, n=491) and ‘housework’ (n=48.9%, n=448). A lack of time and/or exams/college workload was the most commonly reported barrier to physical activity among both males and females (51.1% and 52.2% respectively) as illustrated in Table 4.2. In relation to sitting time, almost two-thirds reported that they spend at least four
hours sitting down during a typical day at college (65.7%, n=1,139) and this behaviour was independent of sex.

Table 4.2. Perceived barriers to engaging in more physical activity and daily sitting time by sex.

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<th>Physical Activity Variable</th>
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<th>p-Value</th>
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<td>Perceived Barriers</td>
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<td>51.6</td>
<td>408</td>
<td>51.1</td>
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<td>Already take enough exercise #</td>
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<td>12.5</td>
<td>122</td>
<td>15.3</td>
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<tr>
<td>Interested but not willing to spend time</td>
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<td>10.2</td>
<td>85</td>
<td>10.6</td>
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<tr>
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<tr>
<td>Not the sporty type</td>
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<td>4.5</td>
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<tr>
<td>No access to facilities #</td>
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<td>3.9</td>
<td>21</td>
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<td>Not interested</td>
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<td>Exercising too much/overtraining #</td>
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<th>Sitting time during average day at college (hours)</th>
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<td>Less than 1 hour</td>
<td>25</td>
<td>1.4</td>
<td>8</td>
<td>0.9</td>
<td>17</td>
<td>1.9</td>
<td>0.48</td>
</tr>
<tr>
<td>1-2 hours</td>
<td>56</td>
<td>3.2</td>
<td>26</td>
<td>3.1</td>
<td>30</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>2-3 hours</td>
<td>163</td>
<td>9.4</td>
<td>76</td>
<td>9.0</td>
<td>87</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td>3-4 hours</td>
<td>351</td>
<td>20.2</td>
<td>180</td>
<td>21.3</td>
<td>171</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>4-5 hours</td>
<td>475</td>
<td>27.4</td>
<td>227</td>
<td>26.8</td>
<td>248</td>
<td>28.0</td>
<td></td>
</tr>
<tr>
<td>More than 5 hours</td>
<td>664</td>
<td>38.3</td>
<td>330</td>
<td>39.0</td>
<td>334</td>
<td>37.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,734</td>
<td></td>
<td>847</td>
<td></td>
<td>887</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Chi Squared Test for Independence across all response categories, # significant within-variable category differences between male/female proportions based on multiple comparisons with Bonferroni adjustment to p-value.

Alcohol

The reported age of first alcoholic drink ranged from 9–35 years of age and there were no significant differences between male (Md. = 16.0, n = 718) and female (Md. = 16.0, n = 773) drinkers in this regard, [U = 274389.0, z = −0.38 p = 0.70 r = −0.01]. To evaluate internal consistency, Cronbach’s alpha was calculated for the total AUDIT instrument as
well as each sub-domain (Table 4.3). Males scored significantly higher on the total instrument (Items 1–10: U = 191722.0, p < 0.0005), as well as the hazardous drinking subscale (Items 1–3: U = 210397.0, p < 0.0005). A breakdown of total and subscale scores by sex is presented in Table 4.3 below.

Table 4.3 Alcohol Use Disorders Identification Test (AUDIT) and sub-domain scores by sex.

<table>
<thead>
<tr>
<th>AUDIT Domain</th>
<th>Items</th>
<th>Cronbach’s α</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>p-Value #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>n *</td>
<td>Md</td>
<td>n</td>
<td>Md</td>
</tr>
<tr>
<td>Total AUDIT</td>
<td>1–10</td>
<td>0.82</td>
<td>1,329</td>
<td>7.0</td>
<td>651</td>
<td>8.0</td>
</tr>
<tr>
<td>Hazardous Alcohol Use</td>
<td>1–3</td>
<td>0.66</td>
<td>1,469</td>
<td>5.0</td>
<td>707</td>
<td>6.0</td>
</tr>
<tr>
<td>Dependence symptoms</td>
<td>4–6</td>
<td>0.61</td>
<td>1,430</td>
<td>0.0</td>
<td>694</td>
<td>0.0</td>
</tr>
<tr>
<td>Harmful alcohol use</td>
<td>7–10</td>
<td>0.68</td>
<td>1,412</td>
<td>2.0</td>
<td>683</td>
<td>2.00</td>
</tr>
</tbody>
</table>

* Data presented excludes non-drinkers (n = 182) who were not exposed to further items having stated they never drink in item 1. # Mann-Whitney U Test.

With specific reference to the hazardous drinking sub-domain, 54.1% of females (n=412) and 54.7% of males (n=387) reached previously applied sex-specific threshold scores (6 or more for males and 5 or more for females) (Davoren et al., 2015). Males reported more frequent episodes of binge drinking $[\chi^2 (3, n=1,488) =44.89, p <0.0005, \text{ Cramer’s } V=0.17]$. Over half of male drinkers (52.6%, n=377) reported engaging in this behaviour on at least a monthly basis in comparison to 41.4% (n=319) of females. In contrast, the proportion of females who reported that they never binge drink was almost twice that of males (21.7% vs. 10.7%).
Tobacco Smoking and Illicit Substances

Tobacco smoking (regular or occasional) was less prevalent among males (24.0% vs. 26.8%), although this did not reach statistical significance [$\chi^2 (1, n=1,607) = 1.45$, $p=0.23$, Phi $= -0.03$]. Over half of respondents 57.5% (n=906) reported using marijuana/cannabis at least once in their lifetime, with 38.6% (n=587) using in the previous 12 months of the survey and 17.6% (n=266) in the previous 30 days. There was a significant association between lifetime use and sex, with males generally reporting greater use [$\chi^2 (6, n=1,577)=38.97$, $p<0.0005$, Cramer’s V$=0.16$]. Notably, the proportion of males who had used marijuana/cannabis 40 times or more was almost twice the respective proportion of females (21.1% vs. 11.5%).

With regard to lifetime use of other illicit substances, the most prevalent recreational drug among both sexes was Ecstasy/MDMA (males: 22.9%, n=177; females: 12.8%, n=106) followed by Cocaine (males: 19.9%, n=153, females: 10.1%, n=84). A significantly greater proportion of males reported lifetime use of Amphetamine (12.6% vs. 5.9%), LSD (8.9% vs. 4.0%), Cocaine (19.8% vs. 10.1%), Ecstasy/MDMA (22.9% vs. 12.8%), Solvents (3.0% vs. 1.3%), Magic Mushrooms (14.0% vs. 6.8%) and Head Shop Products (11.5% vs. 6.4%) as outlined in Figure 4.3 below.
Figure 4.3 Lifetime use of illicit substances by sex. *significant between sexes p < 0.05 **significant between sexes p < 0.0005. ~Item valid responses: Solvents n=1,597, LSD n=1595, Tranquilisers n=1,602, Head Shop Products n=1,598, Amphetamine n=1,599, Magic Mushrooms n=1,598, Cocaine n=1,600, Ecstasy/MDMA n=1,601. Due to low absolute numbers reporting their use, reelin, heroin and drugs by injection were omitted from this analysis.

Sexual Health and Behaviours

The vast majority of students (87.7%, n=1,348) had been sexually active in the past. Almost 91% classified themselves as ‘heterosexual’ (n=1,412), 3.3% ‘homosexual’ (n=52), 4.4% ‘bisexual’(n=68), 1% ‘asexual’ (n=15) and a small proportion positioned themselves in the ‘other’ category. The median age of first intercourse was 17.0 years with no significant difference between males (Md. 17.0, n=658) and females (Md. 17.0, n=687) [U=222177.0 z=−0.55, p=0.58, r= −0.01].

Reported lifetime number of sexual partners ranged from 0 to 350. Males reported a statistically greater number of partners than females (Md. 5.0 vs. 4.0), U=181787.0, z=−4.3, p< 0.0005, r=−0.12. Just over 6% of participants (n=85) had been previously told
by a doctor that they had a sexually transmitted infection (STI) and there was no significant difference between males and females in this regard \( \chi^2 (1, n=1,345) =2.2, p=0.14, \phi 0.04 \]. A significantly greater proportion of females cited having intercourse with one partner as a protective mechanism against STIs (56.1% vs. 44.0%) and expected their partner to have an STI test (8.0 vs. 3.6%). Males were more likely to have used alcohol/drugs prior to their most recent intercourse (34.8% vs. 28.5%, p=0.02) as outlined in Table 4.4.

Table 4.4 Sexual health behaviours: males versus females.

<table>
<thead>
<tr>
<th>‘In What Way Do You Protect Yourself from a Sexually Transmitted Infection?’ (Yes)</th>
<th>Total (n=1,356)</th>
<th>Males (n = 659)</th>
<th>Females (n = 697)</th>
<th>p-value *</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t protect myself at all</td>
<td>6.2</td>
<td>6.8</td>
<td>5.6</td>
<td>0.41</td>
</tr>
<tr>
<td>I protect myself by use of a condom</td>
<td>61.6</td>
<td>68.3</td>
<td>55.2</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>I have intercourse with only one constant partner</td>
<td>50.2</td>
<td>44.0</td>
<td>56.1</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>I expect my partner to have an STI test</td>
<td>5.9</td>
<td>3.6</td>
<td>8.0</td>
<td>0.001</td>
</tr>
<tr>
<td>Other</td>
<td>1.4</td>
<td>0.8</td>
<td>2.0</td>
<td>0.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>‘Did You Drink Alcohol and/or Use Drugs before You Had Sexual Intercourse the Last Time?’ (Yes/No)</th>
<th>Total (n = 1,331)</th>
<th>Males (n = 650)</th>
<th>Females (n = 681)</th>
<th>p-value *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>31.6</td>
<td>34.8</td>
<td>28.5</td>
<td>0.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>‘Have You (or Your Partner) ever Used the Morning after Pill?’ (Yes/No)</th>
<th>Total (n = 1,322)</th>
<th>Males (n = 629)</th>
<th>Females (n = 693)</th>
<th>p-value *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>44.4</td>
<td>36.7</td>
<td>51.4</td>
<td>&lt;0.0005</td>
</tr>
</tbody>
</table>

All figures are percentage values. * Chi Squared Test for Independence (2x2 cross tabulation male/female*yes/no)

Sleep

With regard to recent sleep quality (n=1543), 29.0% rated this parameter as either ‘very poor’ (6.6%, n =102) or ‘poor’ (22.4%, n= 345), 27.8% as ‘neither poor nor good’, 30.6%
as ‘good’ and 12.6% as ‘very good’. With regard to duration, 79.3% (n=1,215) did not meet the recommended 8-hour threshold during the week (Mon to Fri). There was no significant difference between males and females in terms of perceived sleep quality or reported sleep duration.

**Mental Wellbeing**

In total, 12.6% (n=194) rated their overall mental health as either ‘very poor’ (2.4%) or ‘poor’ (10.2%), 22.6% (n=347) as ‘neither poor nor good’, 42.6% (n=654) as ‘good’ and 22.1% (n=339) as ‘very good’. Males generally rated their mental health more favourably than females \[\chi^2 (4, n=1534)=25.97, p <0.0005, \text{ Cramer’s } V=0.13\]. Of note, a greater proportion of males rated their health as ‘very good’ versus females (27.2% vs. 17.3%). Males also scored significantly higher than females (and therefore more favourably from a mental well-being perspective) on both the Energy & Vitality Index (EVI): [Md. 50.0, n=744 vs. Md. 40.0, n=788), \(U = 22064705.0, z= −8.4, p <0.0005, r= −0.21\] and the Mental Health Index-5 (MHI-5): [Md. 68.0, n=742 vs. Md. 60.0, n=789, \(U=224799.0, z= −7.87, p < 0.0005, r=0.20\]. Table 4.5 outlines the proportion of male and female students that reported being ‘highly stressed’ by each respective stressor. A greater proportion of females were highly stressed by all of the listed stressors. Mann Whitney U tests revealed that, for each stressor, MHI-5 scores were significantly lower (representing greater negative mental health symptoms) among students who reported being ‘highly stressed’ versus those who did not.
Table 4.5 Psychological stressors (‘highly stressed’) by sex and differences in MHI-5 scores between groups.

<table>
<thead>
<tr>
<th>Psychological Stressor (‘Highly Stressed’)</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>Md. MHI-5 Scores (‘Highly Stressed’ vs. other Categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>524</td>
<td>179</td>
<td>345</td>
<td>56.0*** 68.0</td>
</tr>
<tr>
<td>College workload</td>
<td>432</td>
<td>149</td>
<td>283</td>
<td>56.0*** 68.0</td>
</tr>
<tr>
<td>Studies in general</td>
<td>377</td>
<td>122</td>
<td>255</td>
<td>50.0*** 68.0</td>
</tr>
<tr>
<td>Financial situation</td>
<td>352</td>
<td>138</td>
<td>214</td>
<td>53.5*** 68.0</td>
</tr>
<tr>
<td>Pressure of work outside college</td>
<td>290</td>
<td>93</td>
<td>197</td>
<td>52.0*** 68.0</td>
</tr>
<tr>
<td>Competition at college</td>
<td>160</td>
<td>52</td>
<td>108</td>
<td>48.0*** 64.0</td>
</tr>
<tr>
<td>Living situation</td>
<td>147</td>
<td>46</td>
<td>101</td>
<td>44.0*** 64.0</td>
</tr>
<tr>
<td>Family situation</td>
<td>141</td>
<td>45</td>
<td>96</td>
<td>44.0*** 64.0</td>
</tr>
<tr>
<td>Relationships/sexuality</td>
<td>98</td>
<td>38</td>
<td>60</td>
<td>40.0*** 64.0</td>
</tr>
<tr>
<td>Illness</td>
<td>68</td>
<td>17</td>
<td>51</td>
<td>32.0*** 64.0</td>
</tr>
<tr>
<td>Circle of friends</td>
<td>55</td>
<td>18</td>
<td>37</td>
<td>32.0*** 64.0</td>
</tr>
<tr>
<td>Social Media</td>
<td>33</td>
<td>9</td>
<td>24</td>
<td>36.0*** 64.0</td>
</tr>
</tbody>
</table>

*** p< 0.0005, ** p< 0.01, * p< 0.05. # ‘highly stressed’ vs. those who selected one of the other categories in the Likert scale (‘often stressed’, ‘not often stressed’ or ‘never stressed’).

‘Other’ was excluded from this analysis (n=20).

Social Media

Only 3.6% of total participants (n=56) did not have a social media account of any kind.

The most common platforms reported were Facebook (93.0%, n=1,430), Snapchat (69.2%, n=1,064) and Instagram (54.2%, n=833). Females were more likely to have a Facebook, Instagram and Snapchat account and males were more likely not to have an active social media account at all (Table 4.6).
Table 4.6 Social media platforms by sex.

<table>
<thead>
<tr>
<th>Social Media Platform</th>
<th>Total (n = 1,537)</th>
<th>Males (n = 751)</th>
<th>Females (n = 786)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>93.0</td>
<td>90.3</td>
<td>95.7</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Snapchat</td>
<td>69.2</td>
<td>64.2</td>
<td>74.0</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Instagram</td>
<td>54.2</td>
<td>42.7</td>
<td>65.1</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Twitter</td>
<td>40.6</td>
<td>40.6</td>
<td>40.6</td>
<td>1.0</td>
</tr>
<tr>
<td>LinkedIn</td>
<td>27.4</td>
<td>29.2</td>
<td>25.7</td>
<td>0.14</td>
</tr>
<tr>
<td>No social media account</td>
<td>3.6</td>
<td>5.5</td>
<td>1.9</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Other</td>
<td>2.7</td>
<td>2.5</td>
<td>2.9</td>
<td>0.75</td>
</tr>
</tbody>
</table>

All figures are percentage values.

Females were more likely to have posted pictures than males during the 30 days prior to the survey (73.7% vs. 57.2%), $\chi^2 (1, n=1,462) =43.55, p< 0.0005, \phi=0.17$. Of those who posted pictures (65.8% of applicable participants), 44.0% (n=425) posted pictures of themselves either drinking or being around alcohol. During ‘weekdays’ (Mon-Fri), 31.6% (n=464) spent 90 minutes or more per day on social media and there was no significant difference between males and females in this regard (30.3% vs. 32.8%), $\chi^2 (1, n=1,469) =0.99, p=0.32, phi= −0.03$. A significantly greater proportion of females reported spending 90 minutes or more on social media per day at the weekend (35.1% vs. 27.0%) $\chi^2 (1, n=1,457) =10.66, p=0.001, phi= −0.08$.

4.4.3 Predictors of Energy and Vitality Index (EVI) Scores

Significant predictor variables included in the final multiple linear regression model, with EVI scores as the dependant variable, are outlined below in Table 4.7. This model had an adjusted R-squared value of 0.370, thus accounting for 37.0% of the variance in EVI scores.
Table 4.7 Multiple linear regression model with EVI scores as the dependent variable.

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Standardised β</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>−0.15</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>General health rating</td>
<td>0.15</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Daily total fruit and vegetable servings</td>
<td>0.08</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>AUDIT-C scores</td>
<td>0.05</td>
<td>0.04</td>
</tr>
<tr>
<td>Mental health rating</td>
<td>0.32</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Recent sleep quality</td>
<td>0.27</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Social media 90 minutes or more on weekdays</td>
<td>−0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>Perception of being overweight/obese</td>
<td>−0.09</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Adjusted R Squared of the Model</td>
<td>0.370</td>
<td>&lt;0.0005</td>
</tr>
</tbody>
</table>

4.5 Discussion

This study provides an insight into the lifestyle behaviours of students at a Higher Education Institution (HEI) in southern Ireland. In the most recent academic year, there were 231,710 full and part-time enrolments in Irish HEIs, a figure that has consistently increased over the past five years (HEA, n.d.). Therefore, in a time where non-communicable diseases constitute an unprecedented public health challenge, habitual behaviours of this growing cohort are of cross-sectoral interest from the perspective of preserving the health of generations to come (Lee & Loke, 2005).

All registered students of the Institute (n=11,261) with a valid student email address were eligible and provided with an opportunity to participate. This approach was deemed preferable to probabilistic sampling given that the fundamental purpose of this research was to inform an institute-wide campus health promotion initiative (A Healthy CIT). From this perspective, it was essential that all students were provided with an equal opportunity to contribute. Secondly, in-classroom response bias was a concern, due to the smaller class numbers at Cork Institute of Technology relative to many other HEIs. Dissemination
via email afforded students the opportunity to complete the questionnaire in a more private setting, given the sensitive nature of certain items.

In the absence of comparative literature, the initial response rate (21.2%) could be perceived as low. However, in terms of the absolute value, the reported sample size was greater than previously-reported values from a multitude of single-HEI studies. In an Irish context, a previous study carried out at National University of Ireland Galway (Mac Neela et al., 2012) reported a sample size of 841. In addition, although a contrasting probabilistic sampling method was employed, a study conducted at University College Cork reported a sample size of 2,275 (Davoren et al., 2015). It should be borne in mind that, in terms of student enrolments, both of these aforementioned HEIs are of a greater magnitude than Cork Institute of Technology. Internationally, in a study of students attending the University of Marburg in Germany (Keller et al., 2008), a total of 1,319 initial responses were received. This study adopted a convenience sampling approach and was logistically restricted to three of the University’s Schools (Keller et al., 2008). Similarly, convenience sampling was employed in a study conducted at a single UK university where 410 responses to a health and lifestyle questionnaire instrument were received, representing 16% of the HEI sample (Dodd et al., 2010). Finally, the current study’s response rate is also marginally lower than the response rate (27%, n=985) received to a health questionnaire confined to a single campus (Pontevedra) of the University of Vigo in Spain (Varela-Mato et al., 2012). When contextualised in terms of previous Irish and international work, the sample size of the current study appears to compare favourably in this regard.
Although over three-quarters (78.6%, n=1,667) of participants rated their health as either ‘very good’ or ‘good’; this is lower than the most recent age-stratified comparative figures from the general Irish population where 93% of 15–24 year olds and 94% of 25–34 year olds rated their general health within these parameters (IPSOS MRBI & Dept. of Health, 2018). General health was rated more favourably by males in the current study, which is consistent with previous Irish research (Hope et al., 2005) as well as an international study involving first year undergraduate students in Sweden (Vaez & Laflamme, 2003).

The calculated prevalence of overweight/obesity for male (n=979) and female (n=1,011) participants (41.9 % and 34.7% respectively) was greater than previously reported values of 17% (males) and 6.1% (females) within a cohort of university students from 22 countries across Europe, North America, Asia and South America (Wardle et al., 2006). That particular study also highlighted a tendency for students to over-report height and under-report body mass, hence potentially underestimating their overall BMI value (Wardle et al., 2006). Due to a similar reliance on self-reported data in the current study, the true prevalence of overweight and obesity may be even greater in the present cohort.

Given the established association between overweight/obesity and increased relative risk of all-cause mortality on a global scale (Global BMI Mortality Collaboration, 2016), this is a concerning trend that, if maintained, could result in a plethora of detrimental sequelae in later life (Finer, 2015).

The discrepancy between students’ self-perceived and calculated BMI category is also a concern. Although the Kappa measure of agreement, a commonly used indicator of inter-rater reliability, reached statistical significance for these variables (Kappa 0.41, p<0.0005), in practical terms this may constitute a weak level of agreement according to
revised interpretations of this statistic (McHugh, 2012). Level of agreement was lower for males than females (0.32 vs. 0.50), which is consistent with findings in a Canadian study (Herman et al., 2013) but contradictory to findings in a study involving over 34,000 employees of a multi-centre financial company in Japan (Inoue et al., 2007).

Among males, ‘underweight’ was overestimated by 188%, ‘normal weight’ overestimated by 24%, ‘overweight’ underestimated by 29% and ‘obesity’ underestimated by 83%. This suggests that, for males, the magnitude of the discrepancy between perceived and calculated BMI is greatest at either very low (underweight) or very high (obese) BMI values and less exaggerated within the normal and overweight categories. Qualitatively, the following trends were observed among those who provided height/body mass data as well as their self-perceived weight category. Firstly, obesity was underestimated by both females (4% perceived prevalence vs. 11.3% calculated prevalence) and males (1.8% perceived vs. 10.7% calculated). However, a greater proportion of females perceived themselves to be overweight relative to the calculated overweight prevalence (30.7% vs. 23.0%). Conversely, only 22.4% of males perceived themselves as overweight whereas mathematical calculations classified a greater proportion of 31.4% within this category.

Strong evidence has accumulated to suggest that a significant proportion of those who are overweight or obese either perceive themselves to be of normal weight or fail to recognise the extent of their overweight/obesity due to the ‘visual normalisation’ of larger body types in contemporary society (Robinson, 2017). The findings of the current study align with this trend for both sexes with respect to obesity but only for males regarding overweight. The fact that a greater proportion of females classified themselves as
‘overweight’ relative to the calculated prevalence could be attributable to the attenuating effect of visual exposure to aesthetically lean body types in popular media targeted towards female cohorts (Robinson, 2017). The tendency of normal or underweight females to categorise themselves as overweight is also consistent with previous research involving university students across seven European countries (Mikolajczyk et al., 2010). This study concluded that, despite concurrent self-reported height/body mass values yielding a normal calculated BMI, females tended to categorise themselves as excessively fat and males perceived themselves as excessively thin (Mikolajczyk et al., 2010). Future mixed-method studies are required to explore sex-specific patterns of discrepant anthropometric perceptions, to determine the reasons for such discrepancies and determine the extent to which the aforementioned ‘visual normalisation’ of overweight/obesity (Robinson, 2017) influences perceptions. Quantitatively, such research should directly compare self-reported, objectively measured and self-perceived BMI within the same population. Qualitatively, potential social mediators of body image perceptions need to be explored.

From a nutritional perspective, daily fruit and vegetable intake was sub-optimal (median 3.0 servings). In Ireland, the Department of Health has recently revised its dietary guidelines for the population, increasing the recommended daily servings of fruit and vegetables to 7 per day (Healthy Ireland, 2016). In the current study, only 5.5% of males and 5.7% of females habitually achieved this. In terms of absolute values, females reported more daily servings than males, a trend that is consistent with extant literature (Dodd et al., 2010; El Ansari, Stock, John, et al., 2011; Keller et al., 2008).
Conversely, a greater proportion of males attained the minimum recommended volume of physical activity during the 7 days prior to respective survey completion (74.8% vs. 67.8%, \( p=0.003 \)). This substantiates the findings of previous studies that reported a tendency for male students to be more physically active than their female counterparts (Hope et al., 2005; Moreno-Gómez et al., 2012; Varela-Mato et al., 2012).

Sitting time was ingrained within the college day, coupled with a perceived lack of time reported as the predominant barrier to physical activity by both sexes. A recent meta-analysis reported that, regardless of physical activity, the risk of death from all causes increased by 2% for each hour of sitting time per day, with further increases of 5% for each additional hour of sitting time at or greater than a total of 7 hours per day (Chau et al., 2013). HEIs should give consideration to this issue at a macro level whereby the cultural norms of an institution should not intrinsically promote sedentary behaviours. Academic curricula should incorporate, rather than impede, opportunities for students to become more physically active.

The reliability of the AUDIT instrument has been confirmed in a variety of settings (de Meneses-Gaya et al., 2009; Reinert & Allen, 2007), including a HEI cohort in the USA (Kokotailo et al., 2004). The instrument and/or its sub-domains have been utilised internationally to screen for hazardous drinking in HEI student populations (Capron & Schmidt, 2012; Connor et al., 2010; Davoren et al., 2015; Hallett et al., 2012; Heather et al., 2011; Lannoy et al., 2017; Maphisa & Young, 2018). Although hazardous drinking classifications were comparable between sexes (54.1% of females, 54.7% of males), males scored significantly higher on the AUDIT instrument and engaged in binge drinking more frequently. From a risk stratification perspective, a greater proportion of
males (34.8% vs. 28.5%, \( p=0.02 \)) consumed alcohol and/or used drugs prior to their most recent sexual intercourse. Whilst this relationship requires further investigation, it suggests that male students adopt a riskier attitude when under the influence of alcohol and/or drugs, which could result in impaired decision-making that may impact related lifestyle domains (sexual health for example). In terms of sexual risk-taking, males reported a greater number of lifetime sexual partners and were less likely to expect their partner to take an STI test. Males were more likely to have used a number of recreational substances, including Ecstasy/MDMA (22.9% vs. 12.8%) and Cocaine (19.9% vs. 10.1%) which is consistent with previous literature (Hope et al., 2005).

Females experienced greater levels of psychological stress and also achieved statistically lower scores (and therefore less favourable) in both the Energy and Vitality Index (EVI) (positive mental health characteristics) and the Mental Health Index-5 (negative mental health symptoms) measures. This mirrors trends in the general Irish population (IPSOS MRBI & Dept. of Health, 2016b) as well as previously reported trends among HEI students in Ireland (Houghton et al., 2010; Mac Neela et al., 2012).

Of note, mean MHI-5 scores were lower relative to the general Irish population (IPSOS MRBI & Dept. of Health, 2016b) for both females (57.9 vs. 81.8) and males (65.7 vs. 85.5). This was also the case with EVI mean scores for both sexes (females: 41.8 vs. 65.9, males: 50.5 vs. 69.8). Although a contrasting measurement scale was utilised, this trend has been mirrored internationally in Australian research that reported an 83.9% prevalence of psychological distress among a sample of 6,479 university students relative to a prevalence of 29% among the general Australian population (Stallman, 2010). Furthermore, research involving 5,572 university students from 12 countries across
Europe, Asia and North America highlighted a 28.8% prevalence of suicidal thoughts as well as a 33.6% prevalence of clinically-relevant psychological distress (Eskin et al., 2016). Therefore, it is evident that although certain stressors are interwoven within the higher education experience, institutions need to be aware of the significant and measurable detrimental effect that such stressors may be exerting on students’ mental health.

Of all self-rated parameters (general health, recent sleep quality, mental health), sleep quality was rated most negatively (29.0% rated this as either ‘very poor’ or ‘poor’). A substantial body of evidence has accrued in recent years demonstrating an inverse relationship between sub-optimal sleep and academic performance at third level (Abdulghani et al., 2012; Ahrberg et al., 2012; Flueckiger et al., 2014; Gilbert & Weaver, 2010; Hayley et al., 2017; Önder et al., 2014). Only one-fifth of students (20.7%, n=318) reported getting at least 8 hours sleep on a typical weeknight (Mon-Fri), but a tendency to compensate was observed at weekends with an increased value of 58.3%. This may be due to later bed times and waking times at the weekend, which should be addressed in order to stabilise circadian rhythms and standardise sleep patterns across the week (Forquer et al., 2008).

Although the vast majority of students (96.4%) had at least one active social media account, males were more likely not to have any (5.5% vs. 1.9%, p< 0.0005). Notably, from Monday to Friday, almost one third who had any active account (31.6%) spent at least 90 minutes or more each day on social media. Using social media while studying could be associated with inadequate time management and disproportionate cramming.
prior to examinations, as was found in previous Irish research involving a cohort of medical students (Bickerdike et al., 2016).

The second objective was to identify the significant health and lifestyle predictors of positive mental health, using EVI scores as the dependent variable. Sex was included as an independent variable given the fact that statistically significant differences in EVI scores were revealed by a Mann Whitney U Test as outlined above. A regression equation was derived that accounted for 37.0% of the variance in EVI scores with no evidence of multi-collinearity between independent variables and a straight-line relationship between residuals and predicted EVI scores.

Positive predictors were having a ‘good/very good’ general health perception, habitual daily fruit and vegetable servings, AUDIT-C scores (items 1–3 of total AUDIT instrument) ‘good/very good’ mental health rating and ‘good/very good’ recent sleep quality. Negative predictors were female sex, spending at least 90 minutes per day on social media Mon-Fri (0=no, 1=yes), and having a perception of being overweight/obese (0=underweight/normal weight, 1=overweight/obese).

It is not surprising that the predictors with the greatest influence on EVI scores were having a positive (good/very good) perception of mental health (standardised β 0.32), recent sleep quality (standardised β 0.27) and general health (standardised β 0.15). The standardised beta value obtained for AUDIT-C scores however (0.05) suggests that as scores on this subscale measure of hazardous drinking increase, a positive (and therefore more favourable) influence on EVI score is exerted. This relationship could be explained by the fact that alcohol consumption is heavily ingrained within Irish society (Mongan &
Long, 2016) and appears inextricably linked with the higher education lifestyle (Davoren et al., 2016). Students who consume alcohol as part of social activities may therefore feel a greater sense of social acceptance and this in turn could enhance their positive mental health. This hypothesis is supported by the work of Capron and Schmidt, (2012) who acknowledged that for certain students, the immediate benefits, such as social lubrication, may be sought after despite the later cost of negative consequences. A qualitative exploration of this finding would be particularly beneficial to guide the design of cohort-specific alcohol interventions, alternative alcohol-free social activities and institutional policies going forward.

It is notable that calculated BMI values were not a significant predictor of EVI scores in the initial model, but having a perception of being overweight or obese was a statistically significant negative predictor included in the final model. This should be interpreted in the context of the relatively weak level of agreement between self-perceived and calculated BMI category. In the first instance, there is a requirement to investigate and address the evident discrepancies between calculated BMI versus subjectively perceived, and socially influenced, attitudes towards body habitus. The findings of the current paper provide a definitive rationale for this work given that inaccurate perceptions of overweight/obesity, particularly among female students, may be negatively impacting mental health.

4.5.1 Strengths

The predominant strength is the incorporation of a multitude of health and lifestyle domains within a single study hence facilitating multivariate analysis. Validated scales will facilitate future longitudinal studies as well as a myriad of international comparisons
within each health domain. This work also serves to address the paucity of contemporary
data pertaining to the lifestyle behaviours of HEI students in Ireland. Pragmatically, this
study provides empirical evidence to assist HEIs in terms of resource allocation and
strategic prioritisation of health-related domains in light of ongoing funding constraints
(Bickerdike et al., 2018). Furthermore, at the time of writing, planning of the second phase
of *A Healthy CIT’s* programme of research activities has commenced. This phase will
involve dissemination of a second iteration of the questionnaire instrument outlined above
to enable retrospective comparisons with baseline data described in the current paper.

4.5.2 Limitations

Due to the cross-sectional design employed, associations cannot be deemed causal.
Secondly, although all students were eligible to participate, a convenience sample was
employed, which potentially introduced a selection bias. Therefore, findings may not be
representative of all students of the Institute. As there was an inevitable reliance on self-
report data, under/over-reporting, egoism and/or socially desirable responses cannot be
ruled out. Moreover, the progressive decline in responses observed as well as variability
in response numbers to each questionnaire item should be noted. For the purposes of
multiple linear regression, a ‘pairwise’ method of exclusion of missing data was applied.
However, for comparative purposes, replication of the regression analysis using a
‘listwise’ method of deletion did not alter either the variables included in the model, or
the predicted cumulative variance in EVI scores.

It is also possible that there was variability in reported lifestyle trends and health metrics
between participants who responded to the survey during the initial data collection period
(prior to examinations) versus those who responded during the subsequent 7-day period
(post examinations). However, any alleged variability should be considered in the context of the semesterised nature of programme delivery at Cork Institute of Technology. An inherent culture of continuous assessment exists within the Institute in order to disperse student workloads more evenly throughout the academic year. Therefore, it is less likely that the end of semester formal examinations would have significantly influenced habitual lifestyle patterns. Finally, the findings of this study may not be entirely generalisable to Irish or international student cohorts, due to inherent cultural differences that exist between HEIs.

4.6 Conclusion

Health and lifestyle behaviours among this cohort were sub-optimal and would benefit from sex-specific multi-level initiatives incorporating institutional policy review. Initial concerns are hazardous drinking behaviours, sub-optimal fruit and vegetable intake, poor sleep quality and stark misperceptions of anthropometric status. Males may adopt riskier attitudes towards alcohol, illicit substances and sexual behaviours, despite more favourable perceptions of general health. Females appear to exhibit greater levels of psychological stress, particularly with regard to academic workload. Future longitudinal studies are required to make inferences regarding causality. Qualitative exploration would be particularly worthwhile to gain a greater understanding of the micro and macro-level mediators of health-related behaviours during this formative stage.
Chapter 5

Thriving or surviving: staff health metrics and lifestyle behaviours within an Irish higher education setting

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(Appendix D)
5.1 Abstract

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Due to the international paucity of empirical evidence, this study aimed to investigate the health metrics and lifestyle behaviours of a staff cohort in a higher education institution (HEI) in Ireland. Data were collected from 279 (16.4% response rate) HEI staff (academic, management, clerical/support), via a web-based health questionnaire that incorporated validated measures such as the Mental Health Index-5, Energy and Vitality Index, Cohen’s Perceived Stress Scale (short form) and the AUDIT-C drinking subscale. A cluster analytical procedure was used to examine the presence of distinct clusters of individuals exhibiting either optimal or sub-optimal health behaviours. A multitude of concerning patterns were identified including poor anthropometric profiles (64.4% of males overweight/obese), excessive occupational sitting time (67.8% of females sitting for ≥ 4 hours per day), hazardous drinking among younger staff (38.2% of 18-34 year olds), sub-optimal sleep duration on weeknights (82.2% less than 8 hours), less favourable mean psychometric indices than the general Irish population, and insufficient fruit and vegetable intake (62.1% reporting < 5 daily servings). Cluster analysis revealed ‘Healthy lifestyle’ individuals exhibited significantly lower BMI values, lower stress levels and reported fewer days absent from work compared to those with a ‘Sub-optimal lifestyle’. In contrast to the abundance of research pertaining to student cohorts, the current study is the first to examine the clustering of health-related variables in a cohort of HEI staff in Ireland. Findings will be used to inform policy at the host institution and will be of broader interest to higher education stakeholders elsewhere. Future longitudinal studies are required to monitor the health challenges experienced by this influential, yet under-researched cohort.
5.2 Introduction

The Ottawa Charter for Health Promotion (WHO, 1986) called for cross-sectoral collaboration to enable positive health within prominent settings of society. By embedding a consideration for health and wellbeing into all aspects of their built environments, macro-level policies and organisational cultures (Okanagan Charter, 2015), Higher Education Institutions (HEIs) have the potential to become exemplars of the ‘settings based approach’ to health promotion (Dooris et al., 2014), in accordance with the ‘health-promoting university’ framework (Tsouros et al., 1998). As multi-purpose entities, HEIs are also workplace settings for highly skilled and influential staff cohorts (Plotnikoff, Collins, et al., 2015). A ‘healthy workplace’ is defined as one that is engaged in a collaborative process of self-improvement to safeguard and maximise the health, safety and wellbeing of employees (WHO & Burton, 2010).

Health-related research, designed to inform practices and policies within HEI settings, has predominantly focused on student participants, with staff under-represented in comparison (Abood et al., 2003; Freedman & Rubinstein, 2010; Lima et al., 2018). HEI staff are subject to a multitude of occupational demands and stressors that could negatively impact their psychological wellbeing and physical health (Ablanedo-Rosas et al., 2011; Biron et al., 2008), yet there remains a dearth of empirical evidence on a global scale pertaining to the broader health and lifestyle metrics of this cohort.

Relatively little is known about the anthropometric profiles of HEI staff, but one study involving a sample of 806 university staff at a HEI in the USA reported that 48% were either overweight or obese (Freedman & Rubinstein, 2010). Excessive sitting time, an independent risk factor for poor cardio-metabolic health (Dunstan et al., 2012), has also
been reported among HEI staff cohorts in the USA (Fountaine et al., 2014) and Australia (Leicht et al., 2013). Although an international paucity of data exists pertaining to the alcohol consumption patterns of HEI staff, one study involving staff of a UK HEI (n=129) reported a hazardous drinking prevalence of 35%, defined by a score of ≥ 8 on the internationally validated Alcohol Use Disorders Identification Test [AUDIT] (Awoliyi et al., 2014).

Internationally, the higher education sector has undergone a transformative shift away from autonomous academic privilege towards an increasingly pressurised and performance-based corporate environment (Biron et al., 2008; Kenny, 2018; Shin & Jung, 2014). These changes have emerged against a backdrop of increased student numbers and generalised financial constraints since the last global recession (Leonard, 2014). Given these aforementioned challenges, it is unsurprising that high levels of occupational stress have been consistently reported among HEI staff cohorts (Biron et al., 2008; Devonport et al., 2008; Gillespie et al., 2001; Winefield et al., 2003; Winefield et al., 2014). With specific regard to mental health, 31.6% and 7.8% of staff working at a UK HEI exceeded clinical thresholds for anxiety and depression respectively (Mark & Smith, 2012). In addition, 40% of that cohort stated work demands were either a causative or contributing factor to health issues experienced during the 12 months prior to data collection.

Demographically, HEI staff populations are typically comprised of heterogeneous sub-cohorts of academic, administrative, technical and support staff (Gillespie et al., 2001). From a health and wellbeing perspective, academic positions may be particularly stressful due to the diverse range of tasks; teaching, research and administrative, inherently embedded within contractual obligations (Bentley & Kyvik, 2012; Taris et al., 2001;
In light of the dynamic and demanding nature of the contemporary higher education environment, there exists a need to continuously evaluate the health metrics and lifestyle behaviours of HEI staff cohorts. In the general Irish population, health and lifestyle metrics have been found to cluster in statistical patterns, with poorer levels of psychological wellbeing reported by those who exhibited the least healthy cluster of metrics (Conry et al., 2011). Surprisingly, no study to date has holistically investigated a multitude of health and lifestyle variables among a cohort of HEI staff in Ireland. Health promotion practitioners and higher education policy makers are reliant on inferences derived from data pertaining to the general Irish population. This lack of empirical data impedes both the design and evaluation of tailored health initiatives and policies within the sector.

In a broader context, although the inclusive, sustainable and positivist ideals of a ‘health-promoting university’ are in alignment with the core principles of higher education, the dearth of demonstrable evidence pertaining to the efficacy of this approach has been proposed as a possible deterrent to its adoption (Newton et al., 2016). In Ireland, there are over 24,800 ‘whole time equivalent’ staff within the publicly funded higher education sector (HEA, 2018a); potential participants in, and beneficiaries from, designated research that could inform settings based health promotion policies and practices within HEIs.
The current study was conducted as part of a broader programme of research to inform the development of a health-promoting university initiative at the host institution (Bickerdike et al., 2018). The primary aim was to report baseline health metrics and lifestyle behaviours of staff at a single Irish higher education setting; stratified by sex, age and job category where relevant. Additional objectives were to examine the presence of distinct clusters of individuals exhibiting either optimal or sub-optimal health behaviours, and to pragmatically contextualise these clusters in terms of their association(s) with further behavioural indices of direct concern to higher education policy-makers, budget holders and occupational health professionals within similar HEIs and organisational settings. The study is intended to constitute the first phase of a longitudinal programme of Irish research that aims to ‘bridge the gap’ between the theoretical ideals of the ‘health-promoting university’ (Dooris, 2001; Tsouros et al., 1998) and demonstrable behavioural indices of population health and organisational performance within the publicly funded higher education sector.

5.3 Methods

5.3.1 Study Design

A cross sectional design was employed. Data were collected during the second Semester (Spring) of the 2015/16 academic year using an online questionnaire instrument. Staff members listed on the institution’s email database (N=1,705) were deemed eligible to participate, with the exception of those who had already completed a similar questionnaire (Bickerdike et al., 2019) tailored towards the student cohort (such as postgraduate students concurrently involved in academic programme delivery). The research protocol
and questionnaire instrument were approved by the Research Ethics Committee of the host institution prior to data collection.

5.3.2 Questionnaire Instrument

A questionnaire instrument was developed, consisting of 70 main items pertaining to a series of health and lifestyle domains. Many items were adapted from previous Irish research (Hope et al., 2005; Mac Neela et al., 2012; Morgan et al., 2008) and/or were identical to those within a similar instrument used to gather data from the host institution’s student population (Bickerdike et al., 2019). The instrument was hosted on an online platform (‘Lime Survey’, version 2.05+ Build 140217), where skip-logic exposed participants only to relevant items based on previous responses. Specific variables included in the current analyses are described in Table 5.1
Table 5.1 Summary of variables, together with original source(s) if applicable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Item wording and/or scale description</th>
<th>Categorical/Numeric data for analysis</th>
<th>Adapted/Sourced from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological sex</td>
<td>Are you</td>
<td>Male, Female</td>
<td>Hope et al., 2005</td>
</tr>
<tr>
<td>Age category</td>
<td>Which age category do you fall into?</td>
<td>18-34, 35-44, 45-54, 55+ years a</td>
<td></td>
</tr>
<tr>
<td>Nationality</td>
<td>Are you an Irish national? (If no) What nationality are you?</td>
<td>Irish, UK, Other b</td>
<td></td>
</tr>
<tr>
<td>Job category</td>
<td>Which of the following categories best describes your role in [host institution]?</td>
<td>Academic, Management, Clerical/Support/Other c</td>
<td></td>
</tr>
<tr>
<td>Length of service</td>
<td>For how long in total have you been an employee of [host institution]?</td>
<td>Self-reported in years ± months. Transformed to a single numeric variable (years)</td>
<td></td>
</tr>
<tr>
<td>Weekly working hours</td>
<td>How many hours in total do you usually work per week?</td>
<td>Total hours (inclusive of basic working week + all overtime/work from home)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>What is the highest level of education that you have achieved to date?</td>
<td>Second level, Post-Graduate Diploma or Certificate, Undergraduate Degree, Masters Level Degree, Doctorate d</td>
<td></td>
</tr>
<tr>
<td>General health</td>
<td>In general, would you say your health is?</td>
<td>5-point Likert scale: Very Good, Good, Neither Poor nor Good, Poor, Very Poor</td>
<td>Hope et al., 2005; Morgan et al., 2008; Ware et al., 1993</td>
</tr>
<tr>
<td>Quality of life</td>
<td>How would you rate your quality of life?</td>
<td>5-point Likert scale as above</td>
<td>Morgan et al., 2008</td>
</tr>
<tr>
<td>Self-reported recent</td>
<td>Have you had any of the following in the last 12 months? Predetermined list of 18 common medical</td>
<td>Yes, No</td>
<td>Morgan et al., 2008</td>
</tr>
<tr>
<td>medical history</td>
<td>conditions of which 5 were included in current study (lower back pain, neck disorders, depression,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>anxiety, severe headache)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardio-metabolic indices</td>
<td>In the past 12 months have you been told by a doctor that you have (i) high blood pressure (ii)</td>
<td>Yes, No</td>
<td>Morgan et al., 2008</td>
</tr>
<tr>
<td><strong>Absenteeism</strong></td>
<td><strong>How many days were you absent from work due to personal health problems in the past 12 months?</strong></td>
<td><strong>Self-reported total days</strong></td>
<td><strong>CSO, 2016</strong></td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
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</tr>
<tr>
<td><strong>Body Mass Index</strong></td>
<td>Calculated from self-reported height and body mass</td>
<td>Standard formula: $\frac{\text{Mass} (\text{kg})}{\text{Height}^2 (\text{m}^2)}$ to calculate BMI and participants classified as: Underweight, Normal weight, Overweight, Obese</td>
<td><strong>WHO, 2010</strong></td>
</tr>
<tr>
<td><strong>Self-perceived BMI category</strong></td>
<td><strong>Which general category do you feel best describes you?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fruit and vegetable intake</strong></td>
<td><strong>How many servings of fruit and/or vegetables do you eat on average every day?</strong> Reference provided: 1 serving = 3 dessert spoons of vegetables or 1 piece of fruit</td>
<td><strong>Self-reported total servings</strong></td>
<td><strong>Mac Neela et al., 2012</strong></td>
</tr>
<tr>
<td><strong>Perceived barriers to physical activity (PA)</strong></td>
<td><strong>What would you say is the main reason why you are not (more) physically active at this time?</strong></td>
<td>8 listed barriers plus option to specify another</td>
<td><strong>Morgan et al., 2008</strong></td>
</tr>
<tr>
<td><strong>Activities in last 7 days</strong></td>
<td>Reference description provided of vigorous, moderate and mild physical activity categories. Participants asked to select any activities they took part in during the past 7 days under each of the respective intensity categories.</td>
<td>Selected all applicable activities from predetermined lists of vigorous, moderate and light physical activities. Listed activities based on 2015 Annual Report of the Irish Sports Monitor</td>
<td><strong>IPSOS MRBI &amp; Sport Ireland 2016; Dept. Health Children &amp; HSE 2009, and structure of IPAQ Craig et al., 2003</strong></td>
</tr>
<tr>
<td><strong>PA volume in last 7 days</strong></td>
<td>Participants requested to self-report total frequency and duration of all (i) vigorous (ii) moderate and (iii) mild activities undertaken</td>
<td>Total calculated in minutes per week (frequency x duration). Compared to Irish PA guidelines of 150 min moderate PA minimum per week</td>
<td>As above</td>
</tr>
<tr>
<td><strong>Occupational sitting time</strong></td>
<td><strong>During an average day at work for you, how many hours do you usually spend sitting down?</strong></td>
<td>6-point ordinal scale. Dichotomised to Less than 4 hours/4 hours or more</td>
<td></td>
</tr>
</tbody>
</table>

197
<table>
<thead>
<tr>
<th>Question/Category</th>
<th>Description</th>
<th>Classification/Scoring</th>
<th>Reference(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol consumption patterns</td>
<td>Items 1-3 (Hazardous Alcohol Use/‘AUDIT-C’ subscale) of the Alcohol Use Disorders Identification Test. Measures drinking frequency, typical volume consumed and frequency of binge drinking</td>
<td>AUDIT-C Score range 0-12 $^\text{a}$</td>
<td>Babor et al., 2001</td>
</tr>
<tr>
<td>Drinking classification</td>
<td>Classified based on AUDIT-C score ranges referred to in similar Irish research</td>
<td>Non-drinker (0), Moderate (1-5), Hazardous (6-8), Very Hazardous (9-12)</td>
<td>Conry et al., 2011</td>
</tr>
<tr>
<td>Current smoking status</td>
<td>Do you smoke tobacco now?</td>
<td>Yes regularly, Yes occasionally, No (later dichotomised to Yes, No)</td>
<td>Hope et al., 2005</td>
</tr>
<tr>
<td>Past smoking history</td>
<td>Did you ever smoke tobacco in the past?</td>
<td>No never, Occasionally, Yes regularly (later dichotomised to Yes, No)</td>
<td>Hope et al., 2005</td>
</tr>
<tr>
<td></td>
<td>Have you smoked at least 100 cigarettes in your entire life?</td>
<td>Yes, No</td>
<td>CDC 2007; Morgan et al., 2008</td>
</tr>
<tr>
<td>Classification</td>
<td>Smoking classification based on previous Irish research</td>
<td>Never smoked, Former Smokers (if smoked at least 100 cigarettes), Current Smokers</td>
<td>Conry et al., 2011</td>
</tr>
<tr>
<td>View re tobacco free campus policy</td>
<td>Would you be in favour of the introduction of a smoke-free policy at all campuses?</td>
<td>Yes, No, Don’t Know (later dichotomised to Yes, No/Don’t Know)</td>
<td>Hope et al., 2005</td>
</tr>
<tr>
<td>Recent sleep quality</td>
<td>During the past 30 days, how would you rate your sleep quality overall?</td>
<td>5-point Likert rating as for General Health above (Very Good – Very Poor)</td>
<td>Buysse et al., 1989</td>
</tr>
<tr>
<td>Habitual sleep duration</td>
<td>On average, how much sleep do you get? (per night during the working week, per night during time off/at weekends)</td>
<td>7-point Likert rating. Later dichotomised to Less than 8 hours, 8 hours or more</td>
<td>Mac Neela et al., 2012</td>
</tr>
<tr>
<td>Mental health rating</td>
<td>How would you rate your own mental health?</td>
<td>5-point Likert rating as for General Health above</td>
<td>Hope et al., 2005</td>
</tr>
<tr>
<td>Positive mental health</td>
<td>Energy &amp; Vitality Index [EVI]: 4 item sub-scale of SF-36 health instrument</td>
<td>EVI score from 0-100 (higher scores = more favourable [i.e., more positive mental health])</td>
<td>Ware et al., 1993</td>
</tr>
</tbody>
</table>

$^\text{a}$ Small $^a$ represents statistical significance.
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Score Range</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative mental health</td>
<td>Mental Health Index–5 [MHI-5]: 5 item sub-scale of SF-36 health instrument</td>
<td>MHI-5 score from 0-100 (higher scores = more favourable [i.e., less psychological distress])</td>
<td></td>
</tr>
<tr>
<td>Perceived stress</td>
<td>Short form of the Perceived Stress Scale</td>
<td>4 sub-items; total scale score from 0-16 (higher scores = less favourable [i.e., higher perceived stress])</td>
<td>Cohen et al., 1983</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>4 items from the Job Satisfaction Subscale of the Copenhagen Psychosocial Questionnaire</td>
<td>Each item scored on a 4-point Likert scale: Very Satisfied (100), Satisfied (66.7), Unsatisfied (33.3), Very Unsatisfied (0) and/or the option to tick ‘Not Relevant’</td>
<td>Kristensen et al., 2005; National Research Center for Work Environment, 2007</td>
</tr>
<tr>
<td>Work–life balance</td>
<td>In general, do you feel that your job allows you to maintain a work-life balance?</td>
<td>Yes, No, Don’t Know (later dichotomised to Yes, No/Don’t Know)</td>
<td></td>
</tr>
</tbody>
</table>

a 18-24 & 25-34 collapsed to 18-34, and 55-64 and 65+ collapsed to 55+, b Collapsed variable, c ‘Clerical/Support/Other’ included clerical administration, library services, student services & support, technicians and other support/maintenance services, d Junior certificate/GCSE and Leaving certificate/A Level collapsed into Second Level Education, e International Physical Activity Questionnaire, f for the purposes of calculating PA volume, only vigorous and moderate activities were included. One minute of vigorous activity was considered equivalent to 2 minutes moderate activity and the threshold for meeting PA guidelines was at least 150 min moderate activity, g those who answered ‘never’ to AUDIT-C item 1 (‘How often do you have a drink containing alcohol’) were not exposed to further items and assigned a score of 0 by default
5.3.3 Data Collection

An initial invitation, distributed to 1,705 staff email addresses, provided an introduction to the research study and a hyperlink to the questionnaire. Prospective participants were first directed to a landing page that outlined the purpose and scope of the research and confirmed that participation was entirely voluntary and anonymous. The survey remained accessible for a 14-day period. Two reminder emails were sent during the course of this data collection period and at all stages, staff could ‘opt out’ of further email correspondence if desired.

5.3.4 Data Analysis

Data were exported directly from the ‘Lime Survey’ platform to Microsoft Excel and Statistical Package for the Social Sciences [SPSS] Version 25.0 for analysis. Data cleaning constituted a review of missing data-points and outlier values. Body Mass Index values and physical activity volume were computed using Microsoft Excel, and subsequently added to the SPSS dataset. Categorical variables were collapsed/dichotomised as necessary and relative frequencies presented. Numeric variables were tested for normality prior to selection of appropriate statistical tests. Chi squared tests for independence (with Yates’ continuity correction applied to 2x2 tables), Mann Whitney U tests, and Kruskall Wallis tests were used to ascertain differences between categories as appropriate. The significance level was set at p<0.05, with a Bonferroni adjustment applied where applicable to account for multiple comparisons. Unless otherwise indicated, tests were conducted using pairwise comparisons. All percentage values were expressed relative to the valid responses received to each relevant item, or set of items as appropriate.
The SPSS Two-Step Cluster Algorithm, which is a statistical procedure to identify distinct sub-groups within a dataset (Kent et al., 2014), was used to identify clusters of individuals within the sample. This procedure facilitated the inclusion of both categorical and continuous variables and used the log-likelihood distance measure to generate a final clustered model (Kent et al., 2014). Specific variables entered into the algorithm were selected based on similar Irish research (Conry et al., 2011). These variables were (i) self-perceived general health and quality of life (both scored from 1 ‘very poor’ to 5 ‘very good’), (ii) smoking status (current smoker/former smoker/never smoked), (iii) psychological distress (MHI-5 scores), (iv) vitality and positive mental health (EVI scores), (v) moderate intensity physical activity volume during the 7 days prior to data collection (minutes per week), (vi) drinking classification (based on AUDIT-C classification thresholds), and (vii) habitual total daily servings of fruit and vegetables. Participants with missing data from any of the cluster variables were excluded from the cluster analysis.

5.4 Results

5.4.1 Response Rate and Participant Demographics

In total, 306 responses were recorded on the ‘Lime Survey’ platform (17.9% response rate). Following preliminary data cleaning, 27 cases were removed (26 blank plus 1 that failed to meet inclusion criteria) and the remaining 279 responses (16.4% response rate) were included in subsequent analyses; 39.8% (n=111) male and 60.2% (n=168) female. Out of all initial respondents, 82.1% (n=230) proceeded to the final section of the questionnaire. Chi squared tests for independence revealed no significant associations between progressing to the final section of the questionnaire and sex \( \chi^2 (1, n=279) =0.0 \).
p=1.0, phi=0.01], age category [$\chi^2 (3, n=279)=5.77$, p=0.12, Cramer’s V=0.14] or job specification [$\chi^2 (2, n=275)=1.8$, p=0.41, Cramer’s V=0.08]. Mean completion time was 16.96 minutes. Relevant socio-demographic details are presented in Table 5.2.

Table 5.2 Socio-demographic details and job specification by sex

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (%</th>
<th>Males (%)</th>
<th>Females (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (n=279)</td>
<td>N/A</td>
<td>39.8</td>
<td>60.2</td>
<td>N/A</td>
</tr>
<tr>
<td>Age Category (n=279)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-34</td>
<td>15.8</td>
<td>12.6</td>
<td>17.9</td>
<td>0.04</td>
</tr>
<tr>
<td>35-44</td>
<td>30.8</td>
<td>24.3</td>
<td>35.1</td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td>33.3</td>
<td>36.0</td>
<td>31.5</td>
<td></td>
</tr>
<tr>
<td>55+</td>
<td>20.1</td>
<td>27.0**</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>Nationality (n=279)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irish</td>
<td>95.3</td>
<td>92.8</td>
<td>97.0</td>
<td>N/A*</td>
</tr>
<tr>
<td>UK</td>
<td>2.2</td>
<td>4.5</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.5</td>
<td>2.7</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Highest Level of Education (n=273)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Level</td>
<td>4.4</td>
<td>5.5</td>
<td>3.7</td>
<td>0.85</td>
</tr>
<tr>
<td>Post-graduate diploma/certificate</td>
<td>9.2</td>
<td>7.3</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>Undergraduate degree</td>
<td>22.0</td>
<td>21.1</td>
<td>22.6</td>
<td></td>
</tr>
<tr>
<td>Masters level degree</td>
<td>43.6</td>
<td>44.0</td>
<td>43.3</td>
<td></td>
</tr>
<tr>
<td>Doctorate</td>
<td>20.9</td>
<td>22.0</td>
<td>20.1</td>
<td></td>
</tr>
<tr>
<td>Job Specification (n=275)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic (teaching and/or research)</td>
<td>53.8</td>
<td>64.2**</td>
<td>47.0</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Clerical/administrative/support services or other b</td>
<td>38.5</td>
<td>22.9**</td>
<td>48.8</td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>7.6</td>
<td>12.8**</td>
<td>4.2</td>
<td></td>
</tr>
</tbody>
</table>

**Post-hoc tests revealed a significant difference in male/female column proportions within that respective category, a Chi squared test of independence conditions violated; 66.7% of the expected counts were less than 5, b collapsed variable that included ‘clerical/administration/library services/student services and support’ (n=74), ‘technician’ (n=26), ‘support and maintenance services’ (n=1) and ‘other’ (n=5)

Male participants were generally older, with a greater proportion aged 55 years or more (27.0% vs. 15.5%). Sex was associated with job specification [$\chi^2 (2, n=275) =21.46$, p=<0.0005, Cramer’s V=0.28] with a significantly greater proportion of males reporting management roles (12.8% vs 4.2%) and females reporting clerical/support/other roles (48.8% vs 22.9%). Males (n=107) reported significantly more weekly working hours
(Md. 40.0 vs. 39.0) than females (n=161, U= 6581.5, z= -3.29, p=0.001, r=0.20). There were no significant between-sex differences in self-reported health-related absenteeism during the 12 months prior to data collection (male staff: n=104, Mean [M] 3.4 ± 11.0 days, Md. 0 days vs. female staff: n=160, M 2.1 ± 4.4 days, Md. 0 days, U=8178.5, z= -.259, p=0.80, r=-0.16).

5.4.2 Lifestyle Behaviours and Health Metrics

Lifestyle behaviours and health metrics, stratified by sex, are presented in Table 5.3 below. Calculated BMI values of males (Md. 26.3, n=101) were significantly higher than those of females (Md. 24.3, n=156, U=5716.5 z= -3.71, p<0.0005, r=0.23), with 64.4% of males classified as either ‘overweight’ (47.5%, n=48) or ‘obese’ (16.8%, n=17).

With regard to physical activity volume, 76.5% of respondents (n=166) reported an accumulation of at least 150 minutes of moderate intensity activity during the 7 days prior to data collection. The most commonly cited barriers to increasing physical activity levels were a lack of time or work commitments (37.5%, n=81), followed by an individual’s perception that they already engaged in sufficient exercise (35.6%, n=77). A greater proportion of females reported a lack of time (44.7% vs. 26.2%), whereas males were more likely to report perceptions of already taking sufficient exercise (44.0% vs. 30.3%). Habitual daily occupational sitting time of four hours or more was reported by 60.8% (n=149), with females significantly more likely to exceed this threshold than males, as documented in Table 5.3.
In terms of drinking typologies, 12.4% (n=29) were classified as ‘non-drinkers’ (those who reported ‘never’ drinking alcohol in the first item of the AUDIT-C scale, and were assigned an AUDIT-C score of 0), 72.5% (n=169) as ‘moderate drinkers’ (score of 1-5), 13.3% (n=31) as ‘hazardous drinkers’ (score of 6-8), and 1.7% (n=4) as ‘very hazardous drinkers’ (score of 9). Excluding the non-drinkers (AUDIT-C score of 0), 17.2% (n=35) drank alcohol at a hazardous level. Stratified by age, the highest proportion of hazardous drinkers were in the 18-34 age category (38.2%), followed by 45-54 (15.7%), 35-44 (13.8%) and 55+ (7.1%). Excluding non-drinkers, (AUDIT-C score of 0), absolute AUDIT-C scores ranged from 1 to 9, with a median value of 4. There was no significant difference between total AUDIT-C scores of male (Md. 4.0, n=81) and female drinkers (Md. 4.0, n=123, U=4516.5, z=-1.15, p=0.25, r=0.08). In addition, 24.7% of male (n=20) and 16.0% of female drinkers (n=20) reported binge drinking on at least a monthly basis.

In relation to sleep duration, 82.2% (n=189) reported less than 8 hours on a typical weeknight. Furthermore, 37.3% (n=85) reported either ‘very poor’, ‘poor’ or ‘neither poor nor good’ sleep quality during the 30 days prior to data collection. From a nutritional perspective, 62.1% (n=157) reported habitual consumption of fewer than 5 servings of fruit and vegetables per day. Females reported significantly more daily servings (Md.4.0, n=155) than males (Md. 3.0, n=98, U= 5086.0, z=-4.49, p<0.0005, r=0.28). Although a significantly greater proportion of females rated their quality of life as either ‘good’ or ‘very good’ (95.7% vs. 88.2%), males were more likely to report an adequate work-life balance than females [$\chi^2 (1, n=223)=5.68$, p=0.02, phi=-0.17]. A significantly greater proportion of males (84.1% vs. 70.6%) also reported that they had ‘very often’ or ‘often’ felt confident in their ability to solve personal problems [$\chi^2 (1, n=224)=4.612$, p=0.03, phi=0.15].
Table 5.3. Lifestyle behaviours and health metrics by sex

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (%)</th>
<th>Males (%)</th>
<th>Females (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Health (n=266)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good/Very Good</td>
<td>91.0</td>
<td>87.5</td>
<td>93.2</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Quality of Life (n=264)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good/Very Good</td>
<td>92.8</td>
<td>88.2</td>
<td>95.7</td>
<td><strong>0.04</strong></td>
</tr>
<tr>
<td><strong>Somatic symptoms within previous 12 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower back pain (n=237)</td>
<td>24.1</td>
<td>26.6</td>
<td>22.4</td>
<td>0.56</td>
</tr>
<tr>
<td>Anxiety (n=235)</td>
<td>18.7</td>
<td>13.6</td>
<td>21.8</td>
<td>0.17</td>
</tr>
<tr>
<td>Severe Headache (n=236)</td>
<td>15.3</td>
<td>7.5</td>
<td>20.3</td>
<td><strong>0.01</strong></td>
</tr>
<tr>
<td>Neck Disorder/Chronic neck condition (n=233)</td>
<td>9.4</td>
<td>8.8</td>
<td>9.9</td>
<td>0.97</td>
</tr>
<tr>
<td>Depression (n=232)</td>
<td>6.0</td>
<td>4.5</td>
<td>7.0</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>Cardio-metabolic risk factors within previous 12 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypercholesterolemia (n=227)</td>
<td>16.7</td>
<td>15.7</td>
<td>17.4</td>
<td>0.89</td>
</tr>
<tr>
<td>Hypertension (n=227)</td>
<td>8.4</td>
<td>8.9</td>
<td>8.0</td>
<td>1.00</td>
</tr>
<tr>
<td>Impaired fasting glucose (n=213)</td>
<td>2.8</td>
<td>2.4</td>
<td>3.1</td>
<td>0.74*</td>
</tr>
<tr>
<td><strong>Self-Perceived BMI Category (n=263)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight/Obese</td>
<td>38.8</td>
<td>39.2</td>
<td>38.5</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Calculated BMI Category (n=257)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight/Obese</td>
<td>49.4</td>
<td>64.4</td>
<td>39.7</td>
<td><strong>&lt;0.0005</strong></td>
</tr>
<tr>
<td><strong>Daily Fruit and Vegetable Servings (n=253)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least 5 per day</td>
<td>37.9</td>
<td>25.5</td>
<td>45.8</td>
<td><strong>0.002</strong></td>
</tr>
<tr>
<td><strong>Meeting Physical Activity Guidelines^b (n=217)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76.5</td>
<td>75.9</td>
<td>76.9</td>
<td></td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Occupational Sitting Time (n=245)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 hours or more</td>
<td>60.8</td>
<td>50.0</td>
<td>67.8</td>
<td><strong>0.01</strong></td>
</tr>
<tr>
<td><strong>AUDIT C Scores: Drinking Classification (n=233)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Drinker</td>
<td>12.4</td>
<td>12.9</td>
<td>12.1</td>
<td>0.15</td>
</tr>
<tr>
<td>Moderate Drinker</td>
<td>72.5</td>
<td>66.7</td>
<td>76.4</td>
<td></td>
</tr>
<tr>
<td>Hazardous/Very Hazardous Drinker</td>
<td>15.0</td>
<td>20.4</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td><strong>Current Tobacco Smokers (n=234)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.7</td>
<td>6.4</td>
<td>8.6</td>
<td></td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Mental Health (n=228)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good/Very Good</td>
<td>85.1</td>
<td>85.9</td>
<td>84.6</td>
<td>0.93</td>
</tr>
</tbody>
</table>
Sleep quality within past 30 days (n=228)
Good/Very Good                  62.7 66.3 60.3 0.44

Habitual Sleep Duration (weeknights) (n=230)
8 hours or more                   17.8 14.1 20.3 0.31

In month prior to data collection, ‘very often’ or
‘fairly often’ felt c (n=224-226)
Unable to control important things in life             12.5 15.9 10.3 0.30
Confident in own ability to solve personal problems     75.9 84.1 70.6 0.03
Things going one’s way                              65.5 68.5 63.5 0.53
Difficulties piling so high they cannot be overcome     8.5 6.8 9.6 0.64

‘Very satisfied’ with d
Work prospects (n=220)                           7.7 9.1 6.8 0.72
Work colleagues (n=217)                          29.0 26.7 30.5 0.65
Way abilities are used (n=221)                    11.3 11.2 11.4 1.00
Job as a whole (n=220)                            17.7 20.5 15.9 0.49

Perception of Adequate Work-Life-Balance (n=223)       79.4 87.8 73.7 0.02

a ‘N-1’ Chi Squared Test; 50% of expected counts less than 5, b threshold set as at least 150 minutes of
moderate intensity activity based on participant’s total reported vigorous and moderate intensity activity.
Light intensity activities not included. c chi squared analysis of dichotomised perceived stress scale item
responses; ‘never/almost never/sometimes vs. ‘fairly often/very often’, d chi squared analysis of
dichotomised job satisfaction item responses; ‘not relevant/very unsatisfied/unsatisfied/satisfied vs. ‘very
satisfied’

Score distributions on the Energy and Vitality Index [EVI] (scale range 0-100), Mental
Health Index-5 [MHI-5] (scale range 0-100), Perceived Stress Scale [PSS] (short version
scale range 0-16), and on the item pertaining to overall job satisfaction [JS] (item range
0-100) are presented by sex and job category in Table 5.4. Males (Md. 65.0, n=91) scored
significantly higher than females (Md. 60.0, n=138) on the Energy and Vitality Index
(U=5221.0, z=-2.165, p=0.03, r=0.14).
Table 5.4 Psychological indices and job satisfaction scores by sex and job category

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean</th>
<th>Md.</th>
<th>IQR</th>
<th>Median by sex</th>
<th>Median by job category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td></td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>EVI</td>
<td>58.7</td>
<td>60.0</td>
<td>26.7</td>
<td>65.0</td>
<td>60.0 *</td>
</tr>
<tr>
<td></td>
<td>60.0</td>
<td>65.0</td>
<td>60.0</td>
<td>60.0</td>
<td>65.0</td>
</tr>
<tr>
<td>MHI-5</td>
<td>75.0</td>
<td>76.0</td>
<td>24.0</td>
<td>80.0</td>
<td>76.0</td>
</tr>
<tr>
<td></td>
<td>76.0</td>
<td>80.0</td>
<td>76.0</td>
<td>80.0</td>
<td>76.0</td>
</tr>
<tr>
<td>PSS</td>
<td>4.5</td>
<td>4.0</td>
<td>5.0</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>3.0</td>
<td>4.0</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td>JS b</td>
<td>64.4</td>
<td>66.7</td>
<td>0.0</td>
<td>66.7</td>
<td>66.7</td>
</tr>
<tr>
<td></td>
<td>66.7</td>
<td>66.7</td>
<td>66.7</td>
<td>66.7</td>
<td>66.7</td>
</tr>
</tbody>
</table>

*Acad.* = Academic Staff, *Mgmt.* = Management, *C/S/O* = clerical, support staff, technical and other. Valid responses: EVI n=229, MHI-5 n=228, PSS n=221, JS n=219, * significant difference in EVI scores between sexes, Mann Whitney U Test: p=0.03, b *Regarding your work in general, how pleased are you with your job as a whole, everything taken into consideration?* Very Satisfied (100), Satisfied (66.7), Unsatisfied (33.3), Very Unsatisfied (0)

5.4.3 Cluster Model

The SPSS Two Step Cluster algorithm generated a model with three distinct clusters and an average silhouette measure of cohesion and separation of 0.2. The ratio of the largest to smallest cluster was 1.46 (recommended <3) and goodness of fit was examined by reviewing the Bayesian Information Criterion (BIC), which was lowest (indicative of better fit) in a three-cluster model. Table 5.5 summarises the demographic breakdown of each cluster in addition to the descriptive statistics of the input variables. Each cluster was constituted on the basis of its relative position with regards to optimal health.

Cluster 1: ‘Sub-Optimal Lifestyle’ (25.6%)

Individuals within this cluster mostly displayed sub-optimal metrics relative to the other clusters. General health ratings were mixed, with the greatest proportion of individuals (66.0%) rating this parameter as ‘good’. Although quality of life was mostly rated as ‘good’ (82.0%), 14% of individuals within this cluster rated this parameter as either ‘poor’ or ‘neither poor nor good’; less favourable ratings that were not observed to the same
extent in either the ‘Moderate lifestyle’ or the ‘Healthy lifestyle’ clusters. All individuals were either current (24.0%) or former smokers (76.0%). EVI and MHI-5 scores were the lowest (least favourable) of all three clusters, and significantly lower than the ‘Healthy lifestyle’ cluster. In addition, this ‘Sub-optimal lifestyle’ cluster contained the highest prevalence of both ‘hazardous’ (26.0%) and ‘very hazardous’ (4%) drinking. Physical activity volume was also significantly lower than the ‘healthy lifestyle’ cluster (p=0.002).

Cluster 2: ‘Moderate Lifestyle’ (36.9%)

Individuals in this cluster exhibited metrics that were collectively more favourable than ‘Sub-optimal lifestyle’ individuals, but not as favourable as those within the ‘Healthy lifestyle’ cluster. In contrast to the ‘Sub-optimal lifestyle’ cluster, no individual within the ‘Moderate lifestyle’ cluster had ever smoked, and a greater cumulative proportion rated general health as ‘good/very good’ (91.7% vs. 82.0%). With regard to quality of life, 20.8% rated this parameter as ‘very good’, which was five times greater higher than the ‘Sub-optimal lifestyle’ cluster (4%). Although 69.4% met the national physical activity guidelines, physical activity volume (Md. 240 minutes) within this ‘Moderate lifestyle’ cluster was lowest of all three, and significantly lower (p<0.0005) than the ‘Healthy lifestyle’ cluster (see Table 5.5). Although not statistically significant, median EVI and MHI-5 scores were higher (more favourable) than those of the ‘Sub-optimal lifestyle’ cluster. The prevalence of ‘very hazardous’ drinking was lower than that observed within the ‘suboptimal cluster’ (1.4% vs. 4.0%).
Cluster 3: ‘Healthy Lifestyle’ (37.4%)

‘Healthy lifestyle’ individuals unquestionably displayed the healthiest collective metrics. Every individual in this cluster rated their general health as ‘very good’, and the proportion of individuals that rated quality of life as ‘very good’ was greater than both the ‘Sub-optimal lifestyle’ and ‘Moderate lifestyle’ clusters (71.2% vs. 4.1% & 20.8%). ‘Healthy lifestyle’ individuals also reported significantly greater positive mental health scores (EVI scores), and exhibited significantly lower psychological distress/negative mental health than both the ‘Sub-optimal lifestyle’ and ‘Moderate lifestyle’ individuals. Physical activity volume (Md. 420 min/week) was also significantly greater than the other two clusters, with 91.8% meeting national guidelines. With regard to alcohol, the majority (86.3%) were either non-drinkers or moderate drinkers. Although 13.7% were classed as ‘hazardous’ drinkers, ‘Healthy lifestyle’ was the only cluster within which there were no ‘very hazardous’ drinkers.

Fruit and vegetable consumption was generally sub-optimal across all clusters. Within-cluster proportions reporting at least 5 daily servings were 42% (‘Sub-optimal lifestyle’), 31.9% (‘Moderate lifestyle’) and 39.7% (‘Healthy lifestyle’). Demographically, chi squared tests for independence yielded no significant associations between cluster designation and sex, age category or job category (academic, management, clerical/support/other). There were also no significant differences in length of service or weekly working hours between any of the cluster groups.

A Kruskall Wallis test elicited a significant difference in perceived stress scores between clusters (H=13.65, p=0.001, n=190). Post hoc tests (Mann Whitney U tests with a Bonferroni adjustment to account for multiple comparisons) highlighted that scores were
significantly higher (constituting a greater level of perceived stress) in ‘Sub-optimal lifestyle’ (Md. 7.0, n=48) versus ‘Healthy lifestyle’ (Md. 3.0, n=71, U=1027.5, z=-3.684, p<0.0005, r=0.34). Scores were also higher in ‘Sub-optimal lifestyle’ versus ‘Moderate lifestyle’ (Md. 7.0 vs. 4.0, p=0.036), but this was not statistically significant when the Bonferroni adjustment was applied to the p-value. There was also a significant difference in calculated BMI values between clusters (H=15.52, p=<0.0005), whereby calculated BMI values of ‘Sub-optimal lifestyle’ (Md. BMI 25.4 kg/m²) and ‘Moderate lifestyle’ individuals (Md. BMI 26.2 kg/m²) were significantly higher than those within the ‘Healthy lifestyle’ cluster (Md. BMI 23.9 kg/m²). Interestingly, there was also a significant difference between clusters in the total days of work missed due to personal health problems during the 12 months prior to data collection (H=6.6, p=0.04). Post hoc tests revealed that ‘Sub-optimal lifestyle’ individuals reported significantly more days missed than those in the ‘Healthy lifestyle’ cluster (U=1403.5, z=-2.431, p=0.015, r=0.22).

Table 5.5 Demographics and descriptive statistics of each identified cluster (n=195)

<table>
<thead>
<tr>
<th>Cluster Name:</th>
<th>‘Suboptimal lifestyle’ (n=50)</th>
<th>‘Moderate lifestyle’ (n=72)</th>
<th>‘Healthy lifestyle’ (n=73)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex (%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>42.0</td>
<td>40.3</td>
<td>37.0</td>
<td>0.84</td>
</tr>
<tr>
<td>Female</td>
<td>58.0</td>
<td>59.7</td>
<td>63.0</td>
<td></td>
</tr>
<tr>
<td><strong>Age Category (%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-34</td>
<td>20.0</td>
<td>15.3</td>
<td>20.5</td>
<td>0.75</td>
</tr>
<tr>
<td>35-44</td>
<td>26.0</td>
<td>29.2</td>
<td>27.4</td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td>34.0</td>
<td>41.7</td>
<td>30.1</td>
<td></td>
</tr>
<tr>
<td>55+</td>
<td>20.0</td>
<td>13.9</td>
<td>21.9</td>
<td></td>
</tr>
<tr>
<td>**Job category **(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>40.8</td>
<td>52.8</td>
<td>56.9</td>
<td>0.20</td>
</tr>
<tr>
<td>Management</td>
<td>8.2</td>
<td>6.9</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Clerical/support/other</td>
<td>51.0</td>
<td>40.3</td>
<td>30.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Median [Md.] years</td>
<td>10.5 years</td>
<td>11.0 years</td>
<td>10.3 years</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Length of service</strong> b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Working hours</strong> c</td>
<td></td>
<td>40.0 hours</td>
<td>40.0 hours</td>
<td>40.0 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General health</strong> (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very poor</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>N/A</td>
</tr>
<tr>
<td>Poor</td>
<td>0.0</td>
<td>1.4</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Neither poor nor good</td>
<td>18.0</td>
<td>6.9</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>66.0</td>
<td>91.7</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Very good</td>
<td>16.0</td>
<td>0.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td><strong>Smoking status</strong> (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>24.0</td>
<td>0.0</td>
<td>1.4</td>
<td>N/A</td>
</tr>
<tr>
<td>Former smoker</td>
<td>76.0</td>
<td>0.0</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>Never smoked</td>
<td>0.0</td>
<td>100.0</td>
<td>82.2</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of life rating</strong> (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very poor</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>N/A</td>
</tr>
<tr>
<td>Poor</td>
<td>2.0</td>
<td>1.4</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Neither poor nor good</td>
<td>12.0</td>
<td>1.4</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>82.0</td>
<td>76.4</td>
<td>24.7</td>
<td></td>
</tr>
<tr>
<td>Very good</td>
<td>4.0</td>
<td>20.8</td>
<td>71.2</td>
<td></td>
</tr>
<tr>
<td><strong>MHI scores</strong> (Md. score)</td>
<td></td>
<td>68.0</td>
<td>78.0</td>
<td>84.0  ef</td>
</tr>
<tr>
<td><strong>EVI scores</strong> (Md. score)</td>
<td></td>
<td>55.0</td>
<td>60.0</td>
<td>70.0  ef</td>
</tr>
<tr>
<td><strong>PA volume</strong> (Md.)</td>
<td>290 min/week</td>
<td>240 min/week</td>
<td>420 min/week ef</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drinking classification</strong> (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non drinker</td>
<td>8.0</td>
<td>15.3</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>Moderate drinker</td>
<td>62.0</td>
<td>73.6</td>
<td>75.3</td>
<td></td>
</tr>
<tr>
<td>Hazardous</td>
<td>26.0</td>
<td>9.7</td>
<td>13.7</td>
<td></td>
</tr>
<tr>
<td>Very hazardous</td>
<td>4.0</td>
<td>1.4</td>
<td>0.0</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Fruit and vegetable servings</strong> (Md.)</td>
<td></td>
<td>4.0 servings</td>
<td>4.0 servings</td>
<td>4.0 servings</td>
</tr>
</tbody>
</table>

a n=193, b n=194, c n=191, d Chi Squared Test of Independence conditions violated because of low/nil numbers within some categories. e Kruskall Wallis test yielded significant between group difference and post-hoc test with Bonferroni adjustment yielded a significant difference between ‘suboptimal lifestyle’ and ‘healthy lifestyle’. f Kruskall Wallis test yielded significant between group difference and post-hoc test with Bonferroni adjustment yielded a significant difference between ‘moderate lifestyle’ and ‘healthy lifestyle’.
5.5 Discussion

This study, which was designed to address the international paucity of health and lifestyle data pertaining to HEI staff, is also the first to investigate the clustering of health and lifestyle variables of HEI staff in Ireland. The use of validated measurement tools has facilitated direct comparisons with a nationally-representative programme of longitudinal research that reports on health and lifestyle metrics in the general Irish population (IPSOS MRBI & Dept. of Health, 2015; IPSOS MRBI & Dept. of Health, 2016a; IPSOS MRBI & Dept. of Health, 2019; Morgan et al., 2008). The current study has highlighted a multitude of immediate concerns for policy-makers and health promotion practitioners within the higher education sector.

Body Mass Index (BMI) calculations classified half of the cohort as either ‘overweight’ (35.4%, n=91) or ‘obese’ (14.0%, n=36), with a significantly higher prevalence of overweight/obesity in males (64.4% vs. 39.7%). The overall prevalence (49.4%) of overweight/obesity compared favourably to the most recent cumulative (60%), and stratified higher socio-economic group prevalence (55%) among the general Irish population (IPSOS MRBI & Dept. of Health, 2019), but notably was higher than the 44% prevalence reported in a study involving a cohort of 1,857 HEI staff in Ghana (Doku, 2017). Further, when stratified by sex, overweight/obesity was also more prevalent in the current study amongst both males (64.4% vs. 50.5%), and females (39.7% vs. 31.6%), relative to previous research investigating HEI staff (n=636) in Canada (Perusse-Lachance et al., 2010). Although habitually utilised within the literature (Freedman & Rubinstein, 2010; Perusse-Lachance et al., 2010), self-report data may lead to an underestimation of BMI (Visscher et al., 2006) and therefore the true prevalence of overweight/obesity among the current cohort could be worryingly greater than reported.
Efforts to counteract overweight/obesity could be negated by inaccurate self-perceptions and the ‘visual normalisation’ of excess adiposity (Robinson, 2017; Robinson & Hogenkamp, 2015). In the current study, discrepancies between self-perceived body habitus and calculated BMI were observed amongst male participants, who appeared to underestimate overweight/obesity (39.2% perceived themselves to be ‘overweight/obese’, which was 25% lower than the calculated prevalence of 64.4%). Interestingly, although the calculated overweight/obesity prevalence was significantly lower amongst females (39.7% vs. 64.4%, p<0.0005), there was no significant difference in the perceived prevalence of overweight/obesity between sexes; 38.5% (females) vs. 39.2% (males). From a population health perspective, findings from the current study advocate that future studies investigate sex-specific misperceptions of body habitus, given that such misperceptions appeared to exist even amongst the current highly educated cohort (64.5% to either a Master’s (43.6%) or Doctorate (20.9%) degree level).

With regard to alcohol consumption, 20.4% of male and 11.4% of female participants were classified as either ‘hazardous’ or ‘very hazardous’ drinkers. Hazardous drinking appeared to vary with age, and was most prevalent in the 18-34 age group (28.2% ‘hazardous’ and 5.1% ‘very hazardous). Excluding non-drinkers (12.4%, n=29), 9.8% of female and 23.5% of male drinkers were classified as ‘hazardous’, while all individuals within the ‘very hazardous’ drinking category (AUDIT-C score ≥ 9) were female (3.3% of female drinkers overall, n=4). In contrast, binge drinking on at least a monthly basis was more commonly reported by male drinkers (24.7% vs. 16.0%). Although the current study’s prevalence of hazardous/very hazardous drinking (17.2% excluding non-drinkers) was lower than the 35% prevalence reported in a sample of UK university staff (Awoliyi
et al., 2014), methodological differences limit the validity of this comparison and further research is required.

Although poor sleep has been associated with sub-optimal physical and psychological health metrics (Strine & Chapman, 2005), only 17.8% habitually attained the recommended 8 hours per night during a typical working week (20.3% of females, 14.1% of males). Interestingly, there appeared to be a tendency to ‘catch-up’ at weekends or during non-working weeks, whereby 52.2% attained at least 8 hours. There is a paucity of data, both nationally and internationally, describing the habitual sleep patterns of HEI staff cohorts. Notably, 52.4% of management and 21.3% of academic staff in the current study reported a typical weekly working time in excess of the 48 hour threshold set out under the EU’s Working Time Directive (2003/88/EC) (European Parliament & Council of the European Union, 2003). Further research is warranted to determine the extent to which HEI staff workloads, in particular semester-based increments in workload, negatively impact circadian rhythm.

Despite being associated with hazardous metabolic biomarkers (Thorp et al., 2010), all-cause mortality (Katzmarzyk et al., 2009), and psychological distress (Kilpatrick et al., 2013), occupational sitting time was worryingly high in the female cohort of the current study, with 67.8% (n=101) reporting at least 4 hours of sitting time during a typical working day. Furthermore, the majority of staff (62.1%, n=157) did not meet even the lower threshold of the Irish Government’s widely-publicised recommendations with regard to daily servings of fruit and vegetables; 5 to 7 servings per day (Dept. of Health, 2016a). Notably, the proportion who reported fewer than 5 daily servings in the current study was greater than that previously reported in a study of 806 HEI staff in the USA,
whereby 49% did not attain this threshold (Freedman & Rubinstein, 2010). Workplace food and beverage outlets constitute important settings through which fruit and vegetable consumption can be promoted (Hendren & Logomarsino, 2017). Moreover, a qualitative study that specifically explored the perceptions of staff within a HEI in England highlighted the importance of the campus food environment as a potent enabler of fruit and vegetable intake, albeit within the context of the complex collection of determinants that influence habitual food choices (Bevan et al., 2015). Future research is required to investigate the relationship between frequency of exposure to the campus food environment and fruit and vegetable intake amongst HEI staff in Ireland.

With regard to psychometric indices, mean scores on the Energy and Vitality Index [EVI] and the Mental Health Index-5 [MHI-5] were lower, and therefore less favourable, than comparative data pertaining to the general Irish population (IPSOS MRBI & Dept of Health, 2015; IPSOS MRBI & Dept. of Health, 2016a). Stratified by age and sex, the prevalence of ‘negative mental health’ (MHI-5 ≤ 56) in the current study was also higher than the general Irish population among females aged 35-44 (16.3% vs. 11.0%), males aged 35-44 (15.0 % vs. 11.0%) and females aged 45-54; 21.3% vs. 11.0% (IPSOS MRBI & Dept. of Health, 2016a). In previous work, staff of a UK HEI (n=307) exhibited significantly higher scores on a validated measure of anxiety and depression than a ‘general’ comparative occupational cohort (n=120), who were employed across a range of sectors (Mark & Smith, 2012). Similarly, it is possible that occupational exposure to the inherent constructs of the higher education environment could explain the greater prevalence of psychological distress observed in the current study relative to age and sex-matched data from the general Irish population. In light of this worrying preliminary evidence, further comparative studies are urgently required to investigate the specific
stressors experienced by HEI staff, particularly those that are uniquely attributable to the characteristics of the HEI setting.

There were no significant differences between job categories (‘academic’, ‘management’, ‘clerical/support/other’) with regard to MHI, EVI, perceived stress or job satisfaction scores. This is in contrast to previous research that demonstrated greater levels of psychological strain and poorer job satisfaction among academic relative to non-academic HEI staff in Australia (Winefield et al., 2003). It is possible that such distinctions no longer exist in contemporary HEIs, and that academic and non-academic staff exhibit similar psychometric indices. However, considering the methodological differences between the current study (n=279 staff from a single HEI in Ireland) and the work of Winefield et al. (N=8,732 staff drawn from 17 distinct HEIs in Australia), such interpretations remain speculative.

In the current study, male participants were older, worked more weekly hours, and were more likely to hold management positions. As an emergent sex-related pattern, it was notable that a greater proportion of males underestimated the prevalence of overweight/obesity, perceived that they took sufficient physical activity (despite no sex differences in actual physical activity volume), engaged in monthly binge drinking and failed to consume sufficient fruit and vegetables. Interestingly, these metrics coexisted alongside a greater perception of work-life balance, higher EVI scores, and greater self-efficacy in terms of solving personal problems. Although beyond the scope of the current study, it is possible that particular sex constructs may mediate the development of positively skewed perceptions of health and lifestyle metrics amongst male HEI staff. Future studies to investigate and address potential misperceptions may therefore be a
prerequisite to enabling healthier lifestyle choices. Moreover, although carried out in an industrial rather than a higher education setting, a previous qualitative study in Sweden concluded that managers’ occupational performance, leadership styles and health were intrinsically interwoven concepts further mediated by working conditions (Lundqvist et al., 2012). Given that male participants in the current study were significantly more likely to hold management positions, further research is warranted to investigate whether health-related misperceptions could indirectly mediate the recognition of health-related challenges at management level, and crucially, the attainment of a broader organisational commitment to health and wellbeing within HEIs.

A novel, yet critically important, objective of this study was to examine whether health-related parameters clustered together in distinct patterns, as has been observed among the general Irish population in previous research (Conry et al., 2011). On the basis of a sub-set of variables, the SPSS Two Step Cluster algorithm identified a continuum of clustered lifestyle patterns; 1. ‘Sub-optimal’, 2. ‘Moderate’ and 3. ‘Healthy’.

Perceived stress scores of ‘Healthy lifestyle’ individuals were significantly lower (indicative of lower perceived stress) than those in the ‘Sub-optimal lifestyle’ cluster. Stress scores of ‘Sub-optimal lifestyle’ individuals were also higher than those in the ‘Moderate lifestyle’ cluster (p=0.036), although this was no longer significant when a Bonferroni adjustment was applied. These findings indicate that participants who displayed the healthiest collective health metrics also experienced significantly lower levels of stress. Stress reduction amongst HEI staff may also be attributable to broader organisational factors as reported in the work of Pignata et al. (2017), whereby a sub-sample of 419 HEI staff who had previously participated in a multi-setting Australian
study described changes in management structures, organisational stress-reduction resources and policies, and specific job characteristics as key determinants of stress-reduction. Findings of the current study substantiate the need for further research to investigate (i) the degree to which lower stress levels either result from, or contribute to, healthy clustered lifestyle behaviours and metrics among HEI staff cohorts, and (ii) how these constructs are in turn mediated by organisational culture, operational structures and the built environment.

Secondly, as a population health metric of multi-sectoral concern, it is pertinent to note that calculated BMI values were significantly higher amongst both ‘Sub-optimal lifestyle’ and ‘Moderate lifestyle’ individuals relative to those within the ‘Healthy lifestyle’ cluster. Notwithstanding the fact that this study relied upon self-reported data, it appears that those within the healthiest cluster were also more likely to maintain a normal anthropometric profile.

Finally, given that the cost of sick leave within the Irish public sector amounted to €381.5 million in 2018 (Dept. of Public Expenditure & Reform, 2019), the current study is indicative of a potential ‘business case’ for enabling positive health amongst HEI staff. ‘Healthy lifestyle’ individuals reported significantly fewer days absent from work due to personal health problems than those within the ‘Sub-optimal lifestyle’ cluster. Due to the cross-sectional nature of this study, this remains purely an association, and no inferences can be made in terms of causality. It is also possible that underlying chronic ill-health, not assessed within the scope of the current study, concurrently mediated both health and lifestyle metrics and absenteeism. Nonetheless, findings suggest that more favourable health metrics and lifestyle patterns were related to lower absenteeism in this cohort of
HEI staff. It is therefore of national interest to conduct future studies to evaluate the nature of the relationship between health-related variables and absenteeism in Irish HEI settings. It is possible that investment in multi-component ‘health-promoting university’ initiatives could ultimately represent a cost-effective approach towards tackling public-sector absenteeism at a macro-level, in addition to improving overall health risk at the level of the individual.

5.5.1 Practical Implications

The current study has highlighted the urgent need for tailored interventions to ameliorate the serious health challenges experienced by HEI staff, of which there are over 24,800 ‘whole-time equivalents’ employed in the publically funded Irish higher education sector (HEA, 2018a). Many detrimental health behaviours identified in the current study appeared to be intrinsically related to the demands of the higher education environment.

Ireland now faces a period of unprecedented economic difficulties precipitated by the global COVID-19 pandemic (McQuinn et al., 2020), and a recession of this magnitude is likely to increase and prolong the existing funding difficulties within the higher education sector. The methodological approach adopted in the current study will therefore be of particular interest to a multitude of stakeholders. As an approach that has been previously implemented both in the general Irish population (Conry et al., 2011), and amongst a cohort of HEI students in Ireland (Murphy, MacDonncha, et al., 2019); a cluster analytical procedure may constitute a pragmatic, replicable and cost-effective method of identifying sub-cohorts of HEI staff who may particularly benefit from tailored and targeted initiatives within HEI settings.
Further to this, it is well-established that the ‘health promoting university’ approach recognises the socio-ecological synergy between organisational (‘structure’) and individual (‘agency’) determinants of health within societal settings (Dooris et al., 2014). Initial parameters of concern identified in the current study; occupational sitting time, unhealthy anthropometric profiles and inaccurate self-perceptions, poor sleep during working weeks and insufficient fruit and vegetable intake would be particularly amenable to multi-component intervention strategies within HEI settings, encompassing broader policy changes to alleviate staff workloads, enable a healthy circadian rhythm, embed movement within the working day and ensure adequate availability of healthy nutritional choices within the campus food environment. Although beyond the scope of the current study, these domains will be examined and reported on more extensively in future work.

5.5.2 Limitations

Although this study is the first to holistically examine a multitude of health and lifestyle behaviours in a cohort of HEI staff in Ireland, convenience sampling may have introduced selection bias. In addition, cross-sectional associations cannot be deemed causal, and the reliance on self-reported data could have led to inaccurate and/or socially desirable responses. This, in turn, may have impacted upon the calculated overweight/obesity prevalence, in addition to weekly PA volume and associated inferences in terms of relative adherence to PA guidelines.

The current HEI constituted the workplace setting of a heterogeneous cohort of full-time tenured staff, in addition to those fulfilling fixed-term contracts and casual/hourly-paid
roles. The centrally-moderated institutional database used to disseminate the questionnaire instrument was comprised of email addresses of tenured, casual and recently-retired staff. The transience of certain staff sub-cohorts in this regard may have limited retrospective inferences regarding the internal generalisability of findings. Findings should therefore be cautiously interpreted in light of the aforementioned transient nature of some casual roles within contemporary HEIs. With respect to external validity, findings may not be fully generalisable to related cohorts in other HEIs or industry settings due to differences in organisational cultures, policies and built environments.

Relative to the number of emails distributed to listings on the institutional database (N=1,705) the response rate was low (16.4%), but would theoretically increase to 20.3% if calculated only in terms of the 1,374 staff listed by Human Resources (HR) within the Annual Report of the host HEI for the academic year in question. The discrepancy between the institutional database and HR records may have been attributable to obsolete entries that remained within the email database at the time of data collection, including (i) the above-mentioned cohorts of transient/casually paid staff whose roles may have ceased, (ii) recently retired staff, and (iii) ‘ancillary’ contracted staff who were automatically assigned institutional email addresses, although not directly affiliated to the HEI.

Although ‘responders’ can exhibit demographic differences from target populations, previous studies that investigated the impact of low response rates in questionnaire-based research have found little evidence that non-response bias would meaningfully change the broader conclusions derived from these studies (Lie et al., 2019; Lin et al., 2017;
Meterko et al., 2015). In the case of the current study, a review of data within the Annual Report of the host institution suggested that the relative representation of sub-categories of staff within the sample were similar to records maintained by the HEI’s Human Resources (HR) department. In this regard, ‘academic’ staff constituted the largest proportion (53.8% in current sample vs. 64.4% HR data), followed by ‘clerical/support/other’ (38.5% vs. 34.9%). ‘Management’ constituted the lowest proportion in both the current sample and HR data; 7.6% vs. 0.7%. The greater absolute proportion of ‘management’ staff in the current study relative to HR records may have been attributable to some senior academic staff identifying as management by proxy of fulfilling managerial duties.

5.6 Conclusion

This research has identified a multitude of concerning health and lifestyle behaviours among a cohort of staff within an Irish higher education setting. A sub-set of health and lifestyle metrics were demonstrated to cluster along a continuum, whereby ‘Healthy lifestyle’ individuals exhibited significantly lower levels of stress, lower BMI values, and fewer days absent from work than those with a ‘Sub-optimal lifestyle’

In a broader context, future longitudinal studies should investigate sex-mediated perceptions of health, anthropometric and lifestyle behavioural trends of highly-influential, yet under researched, staff cohorts within an ever-evolving higher education environment. By virtue of their positions within the highest level of contemporary education systems, HEI staff are influential facilitators of curricula, policy design, community outreach efforts and pastoral support. A failure to act on the findings of the
current study by investigating and addressing the setting-specific determinants that mediate the health literacy and health behaviours of HEI staff could substantially impede broader societal efforts to reduce the morbidity, mortality and economic costs associated with obesity, non-communicable diseases and mental ill-health.
Chapter 6

Not So Different After All! A Comparative Investigation into Student and Staff Health Metrics in an Irish Higher Education Setting
6.1 Abstract

Higher Education Institutions (HEIs) constitute influential health promotion settings, and a ‘Healthy University’ (HU) has been conceptualised as a HEI that embeds health within all aspects of its operations. Although student lifestyle metrics have been substantially explored in single-cohort studies, there remains a dearth of international representative research examining the socio-ecological determinants of health amongst all stakeholders who interact with, and within, contemporary HEIs. As part of a broader research strategy to inform a ‘HU’ initiative, the current descriptive case study aimed to comparatively investigate the health risk profiles, habitual behaviours, perceptions and health challenges of both students and staff, within the context of their shared HEI setting. Data were gathered from multiple sources, including questionnaire instruments completed by two distinct cohorts of students (n=2,267) and staff (n=279) of the multi-campus HEI. These anonymized instruments were purposively designed to facilitate between-cohort comparisons, through the derivation of two novel indices; a ‘Health Risk Index’ (HRI), and a ‘Health Perceptions Index’ (HPI). Quantitative data were further contextualized with respect to the structure, culture and environment of the case campus setting. This encompassed thematic analyses of ‘free-text’ qualitative comments of both students and staff within the respective questionnaire instruments, in addition to a desk review of relevant documentation pertaining to the case HEI. Notably, there were five prevalent ‘risk’ variables that were common to both students and staff; (i) lack of energy and vitality (reported by >80% of both cohorts), (ii) sub-optimal sleep, (iii) insufficient fruit and vegetable intake, (iv) excessive sitting time, and (iv) risk-related Body Mass Index (BMI). In addition, both cohorts consistently alluded to environmental barriers to positive health practices within the context of the HEI setting. This research was indicative of the mutual exposure of both students and staff to socio-ecological barriers to positive health within
the context of an increasingly pressurised higher education environment. A paradigm shift towards addressing environmentally mediated health challenges should serve as a fundamental strategic priority for management within the case HEI, and similar organisational settings.

**Keywords**

Higher education; healthy universities; population health; health promotion; student health and wellbeing; faculty health and wellbeing
6.2 Introduction

The Ottawa Charter for Health Promotion (WHO, 1986) advocated for a socio-ecological, cross-sectoral and holistic approach towards enabling positive health, and emphasised the need to empower habitually healthy choices within prominent societal settings. Higher Education Institutions (HEIs) are multi-faceted settings within which health-related behaviours of students and staff are often determined by distinct organisational policies, cultures and operational ecosystems (Dooris et al., 2017; Taylor et al., 2019).

In this regard, there is an accumulating body of literature pertaining to the concept of ‘Healthy Universities’ (HUs); HEIs that implement a ‘whole-university’ approach to embed a ubiquitous consideration for health and wellbeing within their core operations, activities, policies and structures (Dooris et al., 2010; Okanagan Charter, 2015; Suárez-Reyes et al., 2019). Theoretical principles and perspectives underpinning the HU approach include the aforementioned Ottawa Charter, socio-ecological theory, salutogenesis, organisational development and systems thinking (Dooris et al., 2014). In practice, collaborative international networks and communities of practice have emerged to inform and advance the implementation of HUs (Dooris et al., 2019). The HU approach also synergistically aligns with parallel agendas such as sustainable development and equality/diversity (Dooris et al., 2017), further substantiating the rationale for its implementation.

Despite the theoretically transformative health-promoting potential of HUs, health-related research within HEI settings has predominantly centred on the investigation of isolated health domain(s) amongst segregated cohorts of either students ‘or’ staff. Although such studies are of relevance, for example in the context of addressing the
incidence of lifestyle-related non-communicable diseases (Feigin et al., 2016), these
methodological constraints have limited the universal generalisability of findings to all
stakeholders within the higher education environment.

Nevertheless, a myriad of distinctly concerning health-related parameters have been
reported amongst international HEI student cohorts. In this regard, higher education has
been described as an inherently experimental and transitional life stage (Dooris et al.,
2010), associated with behavioural risk-taking in the form of harmful alcohol
consumption (Davoren et al., 2015; 2016), risky sexual practices (Downing-Matibag &
Geisinger, 2009), and illicit drug use (El Ansari, Vallentin-Holbech, et al., 2014; Hope et
al., 2005; Yi et al., 2017). The behavioural patterns of the higher education lifestyle may
also precipitate an increase in students’ body fat; a physiologically deleterious trend of
multi-sectoral relevance in the context of the current 60% prevalence of
overweight/obesity amongst the Irish population (IPSOS MRBI & Dept. of Health, 2019).
Mental health parameters of HEI student cohorts have also been highlighted as a cause
for concern in international literature (Eskin et al., 2019; Grasdalsmoen et al., 2020; Hunt
& Eisenberg, 2010; Prince, 2015). Indeed, recent research reported worryingly high
prevalence rates of generalised anxiety (19.3%) and major depressive episodes (23.1%)
amongst a cohort of 2,118 students across five HEIs in Spain (Ballester et al., 2020).

In comparison to the vast collection of studies examining the quintessential higher
education student lifestyle, HEI staff have been relatively under-represented in the
literature (Freedman & Rubinstein, 2010). However, previous research has reported high
levels of occupational stress (Gillespie et al., 2001; Kinman, 2014; Winefield et al., 2003)
a greater prevalence of psychological distress and psychosomatic symptoms amongst HEI
staff cohorts relative to comparative general and occupational populations (Biron et al., 2008; Mark & Smith, 2012). In addition, research investigating the drinking behaviours of HEI staff in the UK reported a 35% prevalence of hazardous drinking, using a validated alcohol assessment instrument (Awoliyi et al., 2014). Furthermore, a 48% prevalence of overweight/obesity was reported amongst a cohort of staff of a HEI in the USA (Freedman & Rubinstein, 2010), and excessive sitting time has been demonstrated amongst further HEI staff cohorts in Australia (Leicht et al., 2013) and the USA (Fountaine et al., 2014).

In their conceptual framework of the HU, Dooris and colleagues (2010) outlined a multi-modal approach, cognisant of the need to (i) respond to “public health drivers” and identified pathological risk factors, and (ii) adopt a more salutogenic perspective towards the promotion of positive health and wellbeing at a macro-level (Dooris et al., 2010, p.8; Dooris et al., 2017). A subsequent scoping review of published literature pertaining to Hus outlined a consistent reference to socio-ecological models of practice (Dooris et al., 2014), whereby health was viewed as a resource created via the inter-relationships between individuals within, and with, the structures of the broader setting. Surprisingly, however, there remains a paucity of representative research examining the broader, setting-specific determinants of health and wellbeing within the higher education environment. It is possible that the influence of such unexplored determinants may extend not only to students, but to diverse and heterogeneous cohorts of staff, stakeholders and citizens who engage with, and within, the unique structures of the HEI (e.g., built environment facilities, community outreach events, research interventions and/or advocacy initiatives).
The purpose of the current study was to comparatively investigate the health-risk profiles, habitual behaviours, perceptions, and health challenges of both students and staff as outcomes determined by, and within, the context of their shared HEI setting. Given the relative dearth of dual-cohort health research within HEI settings, research of this nature could prove particularly valuable to health promotion practitioners and policy-makers within the higher education sector, while also providing empirical evidence to guide prioritisation within a higher-education environment that has been characterised by economic scarcity, an increasingly competitive and output-driven culture (Kenny, 2018), and increased regulatory requirements (Irish Universities’ Association (IUA), 2014). Aligning research activities with the ‘whole university’ paradigm of the HU approach will aid the design of overarching, macro-level health promotion policies and universal initiatives to enable healthier practices across all population demographics that interact with, and within, contemporary HEIs.

6.3 Aim and Objectives

The primary aim of this study was to compare/contrast the health-related challenges, risk profiles and perceptions of two distinct cohorts of students (n=2,267) and staff (n=279), within the context of a multi-campus HEI setting in southern Ireland. Specific research objectives were to (i) comparatively analyse each cohort’s cumulative health risk and self-perceived metrics, (ii) compare preliminary qualitative perspectives regarding health promotion activities within the case HEI, (iii) review quasi-indicators of each cohort’s habitual interactions with the HEI’s physical activity facilities and food environment, and (iv) triangulate all findings to identify thematic prioritisation areas to inform the
development of a ‘Healthy University’ initiative, further research study design, and multi-modal campus health interventions within the case HEI.

6.4 Materials and Methods

The study was positioned within a broader programme of mixed-methods research to inform the strategic development and ongoing evaluation of a ‘Healthy University’ initiative within a multi-campus HEI in southern Ireland (Bickerdike et al., 2018). This broader research protocol was reviewed and approved by the Research Ethics Committee of the Host Institution prior to data collection.

For the purposes of this study, a descriptive case study approach was utilised to comparatively analyse and contextualise baseline health data gathered from both students and staff with respect to the structure and environment of the case campus setting. Case study research is a particularly amenable approach to investigate complex phenomena from a multitude of perspectives (Baxter & Jack, 2008). HEIs are inherently multi-faceted organisations, and the adoption of a ‘whole university’ approach to create ‘Healthy Universities’ is subject to a myriad of public health and higher education “drivers” (Dooris et al., 2010, p. 8). Given the consistent calls for informed, multi-level interventions to address both individual and environmental determinants of health (Golden & Earp, 2012), the health metrics explored amongst both students and staff were considered from a socio-ecological perspective as the potential outcome of interactions with, and within, the constructs of the case HEI setting.
Data pertaining to the context, environment, and operational structure of the case HEI were collated from both (i) direct observations by the researcher within the setting, and (ii) a preliminary desk review of relevant documentation and HEI records. Student and staff health metrics, interactions with campus physical activity facilities, habitual use of campus food facilities, and perspectives/suggestions regarding health promotion activities at the case HEI were self-reported within anonymised, web-based questionnaire instruments tailored specifically towards the needs of each cohort. These questionnaire instruments constituted a baseline wave of data collection as part of the broader research strategy, and the content and composition of both the student and staff instruments have been described in further detail elsewhere (Bickerdike et al., 2019; 2022).

Where relevant and appropriate, common items were purposively included in both instruments to facilitate direct ‘between-cohort’ comparisons. The chronological timelines of the respective student and staff data collection periods were not wholly concurrent, but data were collected using similar protocols during the second semester of the same academic year. Both instruments were hosted on the same survey platform (Lime Survey version 2.05+ Build 140217), and disseminated internally to student (n=11,261) and staff (n=1,705) listings within the institutional email databases. The student questionnaire was incentivised with entry into a draw to win an iPad, while there was no specific incentive offered to staff. Student/staff datasets were not merged directly for the purpose of the current study, but common items were adapted and coded consistently within each dataset to facilitate meaningful between-cohort comparisons as outlined below. Data were analysed using Microsoft Excel and Statistical Package for the Social Sciences (SPSS) Version 25.0. Where applicable, quantitative data were presented using relative frequencies with respect to the number of valid responses received to that
specific questionnaire item, and pair-wise comparisons were used in statistical analyses. Specific items from both the student and staff instruments were included in the current analyses as follows:

6.4.1 Demographic Items

Sex, age, nationality, and primary campus were reported on both instruments. Students’ ages were collapsed into comparable categories for consistency with staff data. Within both datasets, nationality was dichotomised to ‘Irish/Non Irish’ and campus to ‘Primary Central Campus/Satellite Campus or Other’.

6.4.2 Health Risk Index

Although each cohort’s specific metrics have been extensively reported elsewhere (Bickerdike et al., 2019; 2022), the current study aimed to explore meaningful comparisons between the health profiles and perceptions of the student and staff cohorts. To compare overall co-occurrence of ‘health risks’, a subset of ten items common to both the student and staff instruments were selected and dichotomised within each student/staff dataset to generate ten new variables, coded as either a ‘risk’ (1) or ‘non-risk’ (0) (Table 6.1). A ‘health risk index’ (HRI) score was then calculated based on the cumulative scores across the ten dichotomised variables (possible HRI range from 0 to 10). This approach also facilitated the stratification of the HRI by sex and by campus (‘Primary Central Campus’ or ‘Satellite Campus/Other’) within both the student and staff datasets. The specific sub-set of variables used to calculate HRI within the student and staff datasets are presented in Table 6.1.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Item description</th>
<th>HRI coding</th>
<th>‘Risk’ (1)</th>
<th>‘Non-risk’ (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General health</strong></td>
<td>Self-rated on a 5-point Likert scale</td>
<td>Poor</td>
<td>Very poor</td>
<td>Very good</td>
</tr>
<tr>
<td><strong>Body Mass Index Category</strong></td>
<td>Determined from self-reported height/body mass</td>
<td>Underweight</td>
<td>Overweight</td>
<td>Normal weight</td>
</tr>
<tr>
<td><strong>Daily fruit and vegetable servings</strong></td>
<td>Self-reported total servings</td>
<td>&lt; 5 servings</td>
<td>≥5 servings</td>
<td></td>
</tr>
<tr>
<td><strong>Physical activity (PA) volume</strong></td>
<td>Self-reported frequency and duration of moderate (M) and/or vigorous (V) intensity PA during the 7 days prior to data collection</td>
<td>Did not meet Irish PA Guidelines</td>
<td>Met Irish PA guidelines</td>
<td>(≥150 min adjusted PA volume)</td>
</tr>
<tr>
<td><strong>Sitting time during college or work day</strong></td>
<td>Self-reported (categorical item)</td>
<td>4-5 hours</td>
<td>More than 5 hours</td>
<td>Less than 1 hour</td>
</tr>
<tr>
<td><strong>Drinking classification</strong></td>
<td>AUDIT-C hazardous drinking subscale (score range 0-12) of the Alcohol Use Disorders Identification Test</td>
<td>Hazardous drinker</td>
<td>Non-hazardous drinker</td>
<td>(AUDIT-C ≥6)</td>
</tr>
<tr>
<td><strong>Tobacco smoking</strong></td>
<td>Single item: ‘Do you smoke tobacco now?’</td>
<td>Yes, regularly</td>
<td>Yes occasionally (usually less than one per day)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Sleep duration during ‘weekday’ or ‘working week’</strong></td>
<td>Self-reported on a 7-point categorical scale (‘On average, how much sleep do you get’</td>
<td>&lt;8 hours</td>
<td>≥8 hours</td>
<td></td>
</tr>
<tr>
<td><strong>Negative mental health</strong></td>
<td>Mental Health Index-5 (MHI-5)</td>
<td>Negative mental health</td>
<td>Above negative mental health threshold (MHI-5 &gt; 56)</td>
<td>(MHI-5 ≤ 56)</td>
</tr>
<tr>
<td><strong>Positive mental health</strong></td>
<td>Energy &amp; Vitality Index (EVI)</td>
<td>Below positive mental health threshold</td>
<td>Positive mental health</td>
<td></td>
</tr>
</tbody>
</table>

*a* (WHO, 2010), *b* M and V intensity activity were used to calculate adjusted PA volume, with 1 minute of vigorous intensity activity treated as equivalent to 2 minutes of moderate intensity activity (Dept. of Health and Children & HSE, 2009), *c* (Babor et al., 2001), *d* based on the threshold used in previous Irish research (Conry et al., 2011), *e* Mental health subscales (0-100), with greater scores indicative of more favourable psychological wellbeing (Ware et al., 1993), *f* similar to thresholds reported in previous Irish research (IPSO MRBI & Dept. of Health, 2016a), positive mental health threshold was EVI ≥ 1 SD of the relevant cohort’s mean.
6.4.3 Health Perceptions Index

Within both the student and staff questionnaire instruments, (i) general health (‘In general, would you say your health is?’), (ii) recent sleep quality (‘During the past 30 days, how would you rate your sleep quality overall?’), and (iii) mental health (‘How would you rate your own mental health?’) were rated by participants on comparable, single item 5-point Likert scales ranging from ‘Very Good’ (5) to ‘Very Poor’ (1). To facilitate an all-encompassing analysis of the participants’ perceptions of their own health, the cumulative score from these three scales was used to constitute a ‘health perceptions index’ (HPI) (possible range from 3 to 15, with greater scores indicative of more favourable perceptions). Sleep was purposively included within the HRI, given its increased prominence in contemporary research as an inextricable determinant of both physical health and psychological wellbeing (Perez-Pozuelo et al., 2020).

6.4.4 Campus Physical Activity Facilities and Food Environment

Both student and staff questionnaire instruments contained similar items that served as quasi-indicators of participants’ habitual interactions with a subset of elements of the case HEI’s built-environment; physical activity facilities, and food and beverage outlets. A common item across both instruments ascertained whether students/staff attended a gym/leisure centre, the frequency of same, and whether attendance was solely at a campus facility, an external facility or a combination of both. In addition, both instruments contained exploratory items to ascertain interest in the provision of recreational exercise and/or sport for fun initiatives under the remit of a campus health promotion initiative at the case HEI (‘If, as part of a new health promotion initiative at [HEI name], there was
an opportunity to take part in recreational exercise and/or sport for fun, would you be interested in taking part? ’

With regard to the food environment, both students and staff were requested to indicate whether they had access to food and beverage (F&B) facilities at their campus (‘Are there food and beverage facilities (shop, canteen etc.) on the [HEI name] campus where you spend most of your time?/.....on the campus where you work? ’). Where relevant, participants were also asked (i) whether they perceived that such F&B facilities facilitated healthy nutritional choices, and (ii) to estimate their habitual weekly monetary F&B spend within these facilities.

6.4.5 Preliminary Qualitative Perceptions

‘Free-text’ qualitative data and suggestions were gathered in an exploratory final item prior to the conclusion of both the student and staff questionnaire instruments (‘That concludes the questionnaire, if you have any further comments (or suggestions also added to staff questionnaire), please type them in the space below.’). All free-text comments were exported verbatim and thematically coded within Microsoft Excel by the lead researcher until data saturation was reached.

6.5 Results

6.5.1 HEI Context and Structure

The operational structure of the case HEI is outlined in Figure 6.1. The HEI was comprised of a ‘multi-campus’ geographical structure whereby the largest Faculties were
operated from a Primary Central Campus (PCC), with ‘Constituent Colleges’ located on a number of Satellite Campuses (Maritime Studies, Music/Drama, Art, and Agricultural Studies) at a distance of between 4 and 48km from the PCC.

![Operational Structure of the case HEI](image)

**Figure 6.1.** Operational Structure of the case HEI

Although there were a number of academic, medical, student engagement, and welfare supports located on the Primary Central Campus (PCC) (Figure 6.1), there was no specific HEI human resource dedicated to health promotion; a constraint that has been previously discussed in greater detail elsewhere (Bickerdike et al., 2018). Desk review also failed to yield a distinct ‘Healthy University’ policy or overarching health promotion strategy. The HEI’s Medical Centre, located on the PCC, was accessible to full-time registered students, but not to staff. Further student support services included a Counselling Service, Chaplain, Disability Support Service, Academic Learning Centre, and a designated
Welfare Officer within the Students Union, all centralised within the PCC. Staff were provided with access to a third-party ‘Employee Assistance Service’.

6.5.2 Student and Staff Workload: Structure and Demands

In accordance with the case HEI’s system of modularisation and semesterisation, full-time students were generally required to attain 30 European Credit Transfer System (ECTS) credits within each semester of their academic programme (typically 6 x 5 credit modules, or equivalent). There was an approximate 7 hour weekly workload (inclusive of contact time and expectations for independent study) associated with each 5-credit module. The case HEI’s staff cohort were heterogeneous in terms of occupational roles, and for the purposes of current analyses were categorised as either (i) ‘academic’ (teaching and research), (ii) ‘clerical/support/other’ staff, or (iii) ‘management’ (Bickerdike et al., 2022).

6.5.3 Cumulative Physical Activity Provision and Campus Food Environment

With regard to provision for physical activity within the case HEI, a gymnasium facility (260m²) was located on the PCC, that was accessible to staff and all students from Monday to Saturday. Further PCC facilities; an athletics track (5,020m²) and adjoining stadium facility, grass pitches (38,300m²), a Gaelic games stadium (1,765m²), an indoor sports hall (706m²), three further gymnasias (620m², 121m² and 121m²), a fitness studio (127 m²), all weather pitches (5,500m²), and tennis courts (680m²) were accessible to those attending designated classes, to pre-approved scholarship athletes, and/or via a central booking. The PCC also comprised a walking trail circumnavigating the grass
sports pitches, with adjoining access to a public riverside walk. Satellite Campus 1 (SC1) contained a gymnasium facility (148 m²), in addition to an indoor hall (540 m²), and all-weather pitch (1,125 m²). Satellite Campus 4 (SC4) also contained an indoor hall facility and an outdoor pitch. There were no formally designated recreational physical activity facilities located at either SC2 or SC3.

With regard to the campus food environment, there were five catering outlets (one exclusively for staff), and two retail outlets on the PCC, all of which were operated under the remit of an external company. There were also catering facilities (general seating, self-service), on each of the Satellite Campuses.

6.5.4 Student and Staff Questionnaire Response Profiles

Demographic details of student/staff questionnaire respondents are outlined in Table 6.2 (Bickerdike et al., 2019; 2022). Notably, females were over-represented in both samples, relative to records of the case HEI; student sample: 51.7% vs. 44.9%, staff sample: 60.2% vs. 47.0%. The initial total response rate was greater in the student sample (20.1% vs. 16.3%), but this was also accompanied by a more pronounced linear decline in responses observed throughout the longer student instrument (32.0% vs. 17.6%). Considering ‘completers’ as those who progressed to at least the final sub-section of the cohort’s respective instrument, final student and staff response rates were 13.7% and 13.5% respectively (Table 6.2).
<table>
<thead>
<tr>
<th>Sex</th>
<th>Students</th>
<th>%</th>
<th>N</th>
<th>Staff</th>
<th>%</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>48.3</td>
<td>1,094</td>
<td>39.8</td>
<td>111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>51.7</td>
<td>1,173</td>
<td>60.2</td>
<td>168</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Category</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-34</td>
<td>90.2</td>
<td>2,041</td>
<td>15.8</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td>6.8</td>
<td>153</td>
<td>30.8</td>
<td>86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td>2.3</td>
<td>51</td>
<td>33.3</td>
<td>93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55+</td>
<td>0.8</td>
<td>18</td>
<td>20.1</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irish</td>
<td>89.2</td>
<td>1,937</td>
<td>95.3</td>
<td>266</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non Irish</td>
<td>10.8</td>
<td>235</td>
<td>4.7</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Campus</td>
<td>87.6</td>
<td>1,913</td>
<td>85.1</td>
<td>234</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satellite/Other</td>
<td>12.4</td>
<td>272</td>
<td>14.9</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20.1</td>
<td>2,267</td>
<td>16.3</td>
<td>279</td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘Completers’</td>
<td>13.7</td>
<td>1,541</td>
<td>13.5</td>
<td>230</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

‘Completers’ classified as those who progressed to at least the final sub-section of each respective questionnaire instrument.

6.5.5 Health Risks: Students vs. Staff

Relative frequencies of the ‘risk’ variant (a score of 1) within each of the 10 dichotomised health variables are presented in descending order of prevalence for both students and staff in Table 6.3. Interestingly, the five most prevalent ‘risk’ variables were common to both students and staff, and were also observed in an identical sequential order. As the most prevalent health ‘risk’ overall, it was notable that more than 80% of both students and staff failed to reach the ‘positive mental health’ threshold on the basis of calculated EVI scores (83.7% students, 83.0% staff). This was followed in both cohorts by insufficient sleep duration (79.3% of students < 8 hours during ‘weeknights’, 82.2% of staff < 8 hours per ‘night during the working week’), sub-optimal fruit and vegetable intake (74.9% students, 62.1% staff <5 daily servings), excessive sitting time during a
A typical college or work day (65.7% of students, 60.8% staff, 4 hours or more), and a risk-related (either underweight, overweight or obese) BMI category (41.6% of students, 49.4% of staff). Hazardous drinking (41.4% vs. 15.0%) and negative mental health (40.2% vs. 15.4%) were substantially more prevalent amongst students. Further stratifying the risk-related BMI categories between cohorts, 3.3% of students (n=66) were calculated to be underweight, but there were no staff members within this category. Conversely, the prevalence of overweight/obesity was greater amongst staff (49.4% vs. 38.2%). Tobacco-smoking was the second-least prevalent health risk amongst both cohorts (Table 6.3), but the absolute prevalence of this behaviour was over three-times greater amongst students than staff (25.5% vs. 7.7%).

Table 6.3. ‘Risk’ prevalence across the ten health risk variables amongst students and staff.

<table>
<thead>
<tr>
<th></th>
<th>Students</th>
<th></th>
<th></th>
<th></th>
<th>Staff</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Lacking Energy and Vitality a</td>
<td>83.7</td>
<td>1,282</td>
<td>Lacking Energy and Vitality a</td>
<td>83.0</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Insufficient sleep (&lt; 8 hours Mon-Fri)</td>
<td>79.3</td>
<td>1,215</td>
<td>Insufficient sleep (&lt; 8 hours Mon-Fri)</td>
<td>82.2</td>
<td>189</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>&lt; 5 daily servings of fruit and veg</td>
<td>74.9</td>
<td>1,509</td>
<td>&lt; 5 daily servings of fruit and veg</td>
<td>62.1</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Sitting time of 4 or more hours per day at college</td>
<td>65.7</td>
<td>1,139</td>
<td>Sitting time of 4 or more hours per day at work</td>
<td>60.8</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>‘Risk’ BMI Category</td>
<td>41.6</td>
<td>827</td>
<td>‘Risk’ BMI Category</td>
<td>49.4</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Hazardous drinking b</td>
<td>41.4</td>
<td>684</td>
<td>&lt; 150 mins. moderate PA in 7 days prior to data collection</td>
<td>23.5</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Negative Mental Health c</td>
<td>40.2</td>
<td>615</td>
<td>Negative Mental Health c</td>
<td>15.4</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>&lt; 150 mins. moderate PA in 7 days prior to data collection</td>
<td>28.7</td>
<td>425</td>
<td>Hazardous drinking b</td>
<td>15.0</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Current tobacco smoker</td>
<td>25.5</td>
<td>409</td>
<td>Current tobacco smoker</td>
<td>7.7</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Poor/very poor perceived general health</td>
<td>5.6</td>
<td>118</td>
<td>Poor/very poor perceived general health</td>
<td>0.8</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

% relative to the valid responses received to each relevant questionnaire item, a proportion whose EVI scores did not reach ‘positive mental health threshold’ of ≥1 SD above the respective cohort’s mean score (IPSOS MRBI & Dept. of Health, 2016a), b AUDIT-C score of 6 or more, c MHI-5 score ≤56.
Cumulative ‘Health Risk Index’ (HRI) scores (possible range 0-10) based on the ten dichotomised health risk variables are presented in Table 6.4. Students’ overall, and sex-stratified mean health risk scores were greater than those of staff; 4.83 vs. 4.04 (students vs. staff), 4.80 vs. 4.22 (male students vs. male staff) and 4.86 vs. 3.91 (female students vs. female staff). Mean scores were also greater amongst students of both the Primary and Satellite Campuses, relative to the comparative staff cohorts (Table 6.4). Within each distinct student and staff cohort, Mann Whitney U tests demonstrated that there were no significant ‘between-sex’ or ‘between-campus’ differences in health risk index scores (p>0.05).

Table 6.4. Student/staff health risk index scores, stratified by sex and campus.

<table>
<thead>
<tr>
<th>Health Risk Index</th>
<th>Students</th>
<th>N*</th>
<th>Staff</th>
<th>N*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>0.0</td>
<td>1,109</td>
<td>1.00</td>
<td>193</td>
</tr>
<tr>
<td>Maximum</td>
<td>10.0</td>
<td></td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4.83 (± 1.72)</td>
<td></td>
<td>4.04 (± 1.56)</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>5.0 (IQR 2.0)</td>
<td></td>
<td>4.0 (IQR 2.0)</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>4.80 (± 1.68) (^a)</td>
<td>554</td>
<td>4.22 (± 1.58) (^b)</td>
<td>78</td>
</tr>
<tr>
<td>Females</td>
<td>4.86 (± 1.77)</td>
<td>555</td>
<td>3.91 (± 1.54)</td>
<td>115</td>
</tr>
<tr>
<td>Primary Central Campus</td>
<td>4.85 (± 1.73) (^c)</td>
<td>939</td>
<td>4.01 (± 1.53) (^d)</td>
<td>167</td>
</tr>
<tr>
<td>Satellite/Other</td>
<td>4.74 (± 1.70)</td>
<td>153</td>
<td>4.29 (± 1.76)</td>
<td>24</td>
</tr>
</tbody>
</table>

\(^{*}\) only those who had completed all ten questionnaire items included in HRI calculations, \(^a\) no significant sex differences in HRI within student cohort p=0.33, \(^b\) no significant sex differences in HRI within staff cohort p=0.13, \(^c\) no significant within student cohort difference in HRI between main and satellite campus p=0.49, \(^d\) no significant within staff cohort difference in HRI between main and satellite campus p=0.43.

6.5.6 Health Perceptions Index

With regard to self-rated health perceptions (general heath, mental health, recent sleep quality), a consistently lower proportion of students rated each metric most favourably on the 5 point Likert scale (5/5 ‘Very Good’) relative to staff (Table 6.5). Notwithstanding
the less favourable ratings provided by students across all three metrics, the absolute proportions of students and staff who reported maximally favourable ‘Very Good’ ratings remained low overall; general health (27.7% of students vs. 40.2% of staff), mental health (22.1% vs. 37.7%) and recent sleep quality (12.6% vs. 21.5%).

Within the student cohort, a Mann Whitney U Test demonstrated that the ‘Health Perceptions Index’ (HPI) scores of males (Md. 11.0, mean rank 795.2, n=735) were significantly higher, and therefore more favourable, than those of females (Md. 11.0, mean rank 714.8, n=772; U=253467.0, z=-3.32, r=-0.09, p=<0.0001). In addition, staff of the Primary Central Campus (Md. 12.5, mean rank 116.0, n=192) reported significantly higher HPI scores than staff of the Satellite Campuses (Md. 12.0, mean rank 91.2, n=32; U=2391.5, z=-2.03, r=-0.24, p=0.04).

Table 6.5 Self-Rated health metrics and Health Perceptions Index.

<table>
<thead>
<tr>
<th></th>
<th>Student Cohort</th>
<th></th>
<th>Staff Cohort</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>General Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Very Good</td>
<td>587</td>
<td>27.7</td>
<td>107</td>
<td>40.2</td>
</tr>
<tr>
<td>(4) Good</td>
<td>1,080</td>
<td>50.9</td>
<td>135</td>
<td>50.8</td>
</tr>
<tr>
<td>(3) Neither poor nor Good</td>
<td>336</td>
<td>15.8</td>
<td>22</td>
<td>8.3</td>
</tr>
<tr>
<td>(2) Poor</td>
<td>108</td>
<td>5.1</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>(1) Very Poor</td>
<td>10</td>
<td>0.5</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,121</strong></td>
<td><strong>100.0</strong></td>
<td><strong>266</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sleep Quality During Previous 30 Days</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Very Good</td>
<td>195</td>
<td>12.6</td>
<td>49</td>
<td>21.5</td>
</tr>
<tr>
<td>(4) Good</td>
<td>472</td>
<td>30.6</td>
<td>94</td>
<td>41.2</td>
</tr>
<tr>
<td>(3) Neither poor nor Good</td>
<td>429</td>
<td>27.8</td>
<td>52</td>
<td>22.8</td>
</tr>
<tr>
<td>(2) Poor</td>
<td>345</td>
<td>22.4</td>
<td>28</td>
<td>12.3</td>
</tr>
<tr>
<td>(1) Very Poor</td>
<td>102</td>
<td>6.6</td>
<td>5</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,543</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mental Health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Very Good</td>
<td>339</td>
<td>22.1</td>
<td>86</td>
<td>37.7</td>
</tr>
<tr>
<td>(4) Good</td>
<td>654</td>
<td>42.6</td>
<td>108</td>
<td>47.4</td>
</tr>
<tr>
<td>(3) Neither poor nor Good</td>
<td>347</td>
<td>22.6</td>
<td>28</td>
<td>12.3</td>
</tr>
<tr>
<td>(2) Poor</td>
<td>157</td>
<td>10.2</td>
<td>6</td>
<td>2.6</td>
</tr>
</tbody>
</table>
6.5.7 Interactions with Campus Facilities

With regard to campus food and beverage (F&B) facilities, 65.2% of students (n=1,219) and 97.6% (n=244) of staff reported that they had access to F&B facilities within their host campus. Of the applicable students, 38.7% (n=500) perceived that such facilities enabled healthy choices, 48.1% (n=622) felt that this was not the case, and a further 13.2% (n=170) ‘did not know’. A similar item in the staff instrument reported that the majority of applicable staff (54.3%, n=125) also stated that their campus’ F&B facilities did not enable healthy choices. In terms of habitual monetary spend within the case HEI’s F&B facilities, students’ most commonly reported expenditure range was between €5-10 per week (26.9%, n=347), whereas the greatest proportion of staff reported spending less than €5 per week (26.9%, n=66). The cumulative proportions of students and staff who reported a weekly spend of at least €20 were 17.7% and 20.4%, respectively.

Less than half of both the student and staff cohorts reported attending any gymnasium or leisure facility (42.0% of students, 44.8% of staff). Of the individuals who did, the majority reported attending an external (non-campus based) facility only (52.8% of students, 57.5% of staff), with the remainder attending either a campus gym (30.7% of

<table>
<thead>
<tr>
<th>Health Perception Index (Range: 3-15)</th>
<th>Students (M± SD)</th>
<th>N</th>
<th>Staff (M ± SD)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>10.91 (± 2.22)</td>
<td>1,507</td>
<td>12.19 (± 1.86)</td>
<td>226</td>
</tr>
<tr>
<td>Males</td>
<td>11.13 (± 2.17)a</td>
<td>735</td>
<td>12.15 (± 1.90)b</td>
<td>92</td>
</tr>
<tr>
<td>Females</td>
<td>10.71 (± 2.25)</td>
<td>772</td>
<td>12.21 (± 1.84)</td>
<td>134</td>
</tr>
<tr>
<td>Primary Central Campus</td>
<td>10.97(± 2.19)c</td>
<td>1,270</td>
<td>12.30 (± 1.86)d</td>
<td>192</td>
</tr>
<tr>
<td>Satellite Campus</td>
<td>10.66 (± 2.37)</td>
<td>199</td>
<td>11.59 (± 1.81)</td>
<td>32</td>
</tr>
</tbody>
</table>

*a Mann Whitney U Test revealed a significant difference in students’ HPI scores between sexes (p<0.0001),

*b No significant difference between HPI scores of male and female staff (p=0.89),

*c No significant difference in students’ HPI scores between PCC and SC (p=0.07),

*d Mann Whitney U Test revealed a significant difference in staff HPI scores between PCC and SC (p=0.04)
students, 23.6% of staff) or a combination of a campus gym with another private facility (16.5% of students, 18.9% of staff). A lower proportion of student participants affirmed an interest in participating in recreational exercise and/or ‘sport for fun’ under the future remit of a campus health promotion initiative (55.9% of students vs. 66.9% of staff).

6.5.8 Qualitative Feedback and Perceptions

In total, 189 students and 39 staff provided free-text qualitative contributions within the respective sections of each questionnaire instrument, constituting 8.3% and 14.0% of the initial student (n=2,267) and staff (n=279) samples respectively. Invalid and/or spoiled contributions (n=29) were identified and removed, leaving 199 contributions (161 student, 38 staff), for analysis. Twelve final themes emerged following analysis of student and staff contributions, as illustrated in Table 6.6. Given the unstructured nature of these data, contributions were coded simultaneously across multiple thematic areas where relevant, with relative frequencies summarised.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Total</th>
<th>Students</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Questionnaire design and/or broader campus health promotion (HP) agenda</td>
<td>57</td>
<td>48</td>
<td>9</td>
</tr>
<tr>
<td>2. Nutrition and/or HEI’s food environment</td>
<td>51</td>
<td>42</td>
<td>9</td>
</tr>
<tr>
<td>3. Broader ecological determinants/ HEI culture</td>
<td>48</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>4. Specific activities/initiative suggestions</td>
<td>41</td>
<td>36</td>
<td>5</td>
</tr>
<tr>
<td>5. Satellite campus disconnect/Non-standard students’ disconnect/social disconnect</td>
<td>32</td>
<td>26</td>
<td>6</td>
</tr>
<tr>
<td>6. Workload and/or timetabling</td>
<td>31</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>7. Stress/mental wellbeing</td>
<td>28</td>
<td>22</td>
<td>6</td>
</tr>
</tbody>
</table>
The relative frequencies of a number of themes were similar amongst student and staff. Contributions coded to ‘questionnaire instrument design and/or broader campus HP agenda’ (29.8% of student contributions and 23.7% of staff contributions) encompassed both favourable and critical evaluations. The most prevalent methodological critique related to the substantial length of the student instrument. A number of contributions described a perceived dearth of campus health promotion initiatives within the case HEI:

“Something major needs to be done about students’ health. It is causing huge problems later in life. Students should be made more aware of the dangers of alcohol and drugs […] as well as importance of healthy diet. Colleges do not currently do enough. Also, healthier food should be available on campuses.” (Undergraduate student, Satellite Campus, SC)

“It is about time something like this is being done [HEI name] is very very [sic] behind when it comes to health promotion”

(‘Clerical/Support/Other’ staff member, Primary Central Campus, PCC)

Nutrition within the HEI’s Food Environment

Secondly, similar proportions of student (26.1%) and staff (23.7%) contributions related to nutrition and/or the HEI’s food environment. In this regard, contributors described a perceived lack of access to healthy nutritional options. In addition, despite an apparent intent and preference to eat well, contributors referred to their lack of agency to engage in healthy nutritional choices within the structures and culture of the case HEI:
“Get healthy food into [HEI name] shops and canteen. There are not enough healthy options available and a lot of the time when you want to eat well there is not much/any selection available leading to students buying sweets etc” (Undergraduate student, PCC)

“I think a huge issue is the lack of healthy options on campus – I usually bring all snacks/lunch with me but on the days I don’t I always feel I have to sacrifice my healthy lifestyle…” (‘Clerical/Support/Other’ staff member, PCC)

Financial determinants of nutritional behaviours were described more frequently by students than staff. Several students described experiences within the campus whereby the lower cost of unhealthy foods precluded healthy habitual choices on the part of the “price-sensitive” student consumer:

“I think the offers in the shop are unfair. There was a time when I was dieting and I found it such a struggle financially to take healthy options at the shop when 4 [sausage] rolls and a can of [soda brand] is 2.50 and [smoothie brand] is 3euro +. This semester they have increased the price of their salad plates too... just students are so price sensitive and it makes it harder” (Undergraduate student, PCC)

“in relation to food in the college, the special offers are always on the unhealthy foods. (eg, free can of [soda brand] when you buy sausage rolls, 2 chocolate bars for [...] trying to eat healthier is much more expensive and there is less range of foods.” (Undergraduate student, PCC)

**Broader Ecological Determinants of Health**

Ecological determinants and/or elements of the HEI’s culture that influenced health and wellbeing were also described by both students and staff (24.8% and 21.1% respectively), but the nature of these determinants were cohort-specific. Financial constraints were pervasive within student contributions, in addition to calls for greater access to health-promoting activities and resources for evening students, and for those studying within satellite campuses (SC):

“It would be nice – if evening students could make appointments with the [counsellors] at the [HEI name] campus, between college fees and city rate rents, it is a luxury which I cannot afford and as a result, my mental health is not a priority I can afford to look after at present. If anything – evening course students have more stress’s [sic] then f/t students and it would be nice if the college could
look into expanding [their counselling] service to mind ALL students, even if it was just a discounted rate, Thank you” (Undergraduate student, PCC)

“for a survey on health, I was very surprised that I wasn’t questioned on affordability of health services” (Undergraduate student, SC).

In contrast, a number of staff contributions referred to the reduction in length of many individuals’ lunch-breaks under the terms of a broader public sector working hours agreement:

“With the additional two working hours imposed since the [public sector agreement], it makes exercise difficult during lunch break, as most people now only take 30 mins for lunch. I have found this most difficult as it has impacted on the limited time I have available for ‘me’.”

(Clerical/Admin/Support’ staff member, PCC)

With regard to stress and mental wellbeing, it was pertinent that both student and staff contributions related individuals’ experience of stress and/or negative mental health symptomatology to inherent aspects of the HEI’s structure, ecological determinants, culture and/or processes. Students described financial constraints, a sense of disconnect from the HEI amongst SC individuals and/or ‘non-traditional’ students, pressures associated with academic workloads, and a perceived lack of timely access to counselling services:

“Financing college and the pressure applied by lecturers is the highest stress factor I have ever experienced. And [national student grant system] is an absolute joke”

(Undergraduate student, PCC).

“Greater attention needs to be paid to how much of a workload college students are given. Work is unevenly distributed during the semester and is mainly given out in the last 4 weeks of each semester. This leads to a highly stressful environment for students in these 4 weeks. This has caused myself and many other to endure panic attacks as well as being driven to alcohol to escape reality. The college and lecturers themselves seem completely unaware of this and it urgently needs to be highlighted” (Undergraduate student, PCC).

“The waiting list for counselling facilities needs to be dealt with. Perhaps more counsellors are needed.” (Undergraduate student, SC).
Staff described stressors associated with perceived increases in academic workloads and ancillary tasks:

“Teaching job is getting more and more difficult. We are expected to work miracles with larger groups …….and less resources……. There are a large number of staff stressed on the job and out on stress leave….” (Academic staff member, PCC)

Workloads and Timetabling

Notably, the theme of ‘workload and/or timetabling’ appeared more frequently within staff contributions (42.1% vs. 9.3%). The above-mentioned public-sector agreement appeared to present a specific scheduling constraint for staff with regard to engaging in physical activity during the reduced lunch-break:

“It would be good to have a little extra time [at] lunch time, in order to get a walk or a run, [it’s] difficult with half an hour.” (Clerical/Support/Other’ staff member, PCC)

Timetabling constraints during the habitual ‘college’ day were also described within a number of student contributions. Timetabling clashes, particularly for students commuting to and from the campus, were purported to prevent concurrent engagement with extra-curricular activities, societies and varsity clubs:

“The amount of hours for most students in [Case HEI] is too much. Even in first year I had 22 hours of classes. Projects and assignments had [me] in the library or labs till nearly 10 many nights. Really hard to balance this with a healthy lifestyle. Lots of my friends in [Another HEI] seem to have much more free time in 1st and second year. I can understand being busy in 3rd and 4th year, but in [Case HEI] I have felt like trying to take a sport seriously is very hard and you have to [choose] between a sport or grades.” (Undergraduate student, PCC)

There was a sense of workload-related overwhelm evident within both student and staff contributions. A number of staff contributions expressed dissatisfaction with regard to
changes to the higher education environment, workload allocations and communication channels within the HEI:

“definitely much higher levels of stress in the last number of years with wage cuts, extra (unpaid) hours, budget cuts/increased student numbers and additional demands. Increasingly heavy admin load (serving little purpose). More focus on student as ‘client’ leading to more demands and responsibility on staff but with less support. Everyone’s goodwill is long since depleted.” (Academic staff member, SC)

“………..Teaching staff feel that management, admin and technical staff fail to fully appreciate their difficulty in maintaining standards, when teaching hours on modules have been cut by over 50% yet the learning outcomes remain unchanged, student numbers have risen, and there are fewer staff to do the teaching and marking. All this creates major work stress” (Academic staff member, SC).

Suggested Health Promotion Activities or Initiatives

Finally, a notably greater proportion of students provided suggestions for specific health promotion events or initiatives (22.4% vs. 13.2% of staff). In this regard, physical activity and/or specific exercise-related suggestions were the most commonly suggested activities, with further contributions describing initiatives pertaining to mental health and broader health-related behaviours such as drug use, alcohol consumption and sexual consent. Several student contributions inferred an appreciation for social and/or group-based activities, in addition to the utilisation of social media to promote dialogue pertaining to shared experiences. Staff contributions included meditation/mindfulness scheduled during the working day, in addition to educational and up-skilling activities:

“While promoting healthy eating, exercise and lifestyle are positive steps to good mental health an outlet is needed to get people talking amongst themselves around the area. I know this is easier said than done but could a resource be provided where students can go online to talk about their own experiences around issues that affected them and where they went to seek help. It could be a moderated forum where students can anonymously talk freely and make that initial step forward to seek help on issues that affect them and in turn provide support for others…..” (Undergraduate student, PCC)
6.6 Discussion

The current descriptive case study aimed to comparatively analyse the health metrics, perceptions, and campus interactions of students and staff within the context of a multi-campus HEI in Ireland. Findings were triangulated from multiple sources; desk-based research, quantitative data gathered using web-based questionnaire instruments (Bickerdike et al., 2019; 2022), and qualitative ‘free-text’ comments, perspectives and suggestions within these instruments. Similar protocols were followed to gather data from both the student and staff campus population using cohort-specific, tailored health and lifestyle questionnaire instruments. From a methodological perspective, the strategic inclusion of a series of common items within both instruments facilitated meaningful between-cohort comparisons, particularly with regard to the co-occurrence of health risk behaviours and metrics. In light of the comparative under-representation of HEI staff cohorts relative to students in global research, this novel dual-cohort approach served to align with the ‘whole-university’ paradigm of the HU framework (Dooris et al., 2020; Tsouros et al., 1998) and, in a broader context, with the ‘whole-system’ underpinnings of the settings-based approach to health promotion (Dooris, 2009).

HEIs have a diverse remit as contributors towards the health, wellbeing and sustainable development of global societies (Okanagan Charter, 2015). In this regard, the current study will guide the development and implementation of evidence based health promotion policies and initiatives. The overarching aim of this study was to identify the most universally relevant thematic prioritisation areas to guide the implementation of a campus health promotion initiative within the case HEI, in accordance with the socio-ecological ethos of the ‘Healthy University’ (HU) framework (Dooris et al., 2010; 2014; 2017; Newton et al., 2016; Tsouros et al., 1998). Five strategic thematic prioritisation areas were
identified, each of which are discussed below in terms of their relevance to the future development of a HU initiative within the case HEI, and similar organizational settings elsewhere.

6.6.1 Not So Different After All: Mutual Health Risk Patterns Amongst Students and Staff

In accordance with the socio-ecological model of health (Holt et al., 2015; McLeroy et al., 1988), the ‘intra-personal’ health metrics, perceptions, and behaviours of students and staff participants in the current study could be viewed as outcomes of their interactions with, and within, the environmental and organisational structures of the case HEI setting, further mediated by broader socio-economic conditions (Dahlgren & Whitehead, 1991). Despite the demographic heterogeneity between student and staff questionnaire respondents (Table 6.2), it was notable that the five most prevalent health ‘risks’ were common to both cohorts, and also occurred in an identical sequential order; namely (i) lack of energy/vitality, (ii) sub-optimal sleep duration during a ‘working’ week, (iii) insufficient fruit and vegetable (F&V) intake, (iv) excessive sitting time during a typical college or working day, and (v) risk-related BMI categories (underweight, overweight or obese). The striking similarities between students and staff in this instance were suggestive of a mutual exposure to a collection of ecological determinants within the case HEI’s environment that may have manifested as a collection of similar health risk behaviours and metrics amongst both cohorts. It appears that, irrespective of intra-individual factors, certain structures may have systemically negated the capacity of substantial proportions of the current case population to maintain habitually healthy lifestyle practices alongside their engagement in either educational activities and/or occupational duties within this HEI.
In excess of 80% of students (83.7%, n=1,282) and staff (83.0%, n=190) who completed the Energy and Vitality Index (EVI) failed to attain the ‘positive mental health’ threshold score of at least 1 SD above the respective cohort’s mean (IPSOS MRBI & Dept. of Health, 2016a). The World Health Organisation (WHO) has unequivocally defined health as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity” (WHO, 1948, p. 1). The current study has highlighted the urgent duty of care to further investigate the underlying mechanisms of the poor energy/vitality and reduced wellbeing that was universally exhibited within the respective participant cohorts. From a salutogenic perspective, this research has also reinforced the need to investigate the extent to which the higher education environment, which has become characterised by performance-based rankings (Musselin, 2018), fiscal challenges, and under-resourcing (IUA, 2014), has impacted upon the psychological wellbeing of campus populations. Such studies should adopt a longitudinal design to facilitate the chronological mapping of wellbeing metrics of both students and staff across semesterised academic programmes, which inherently encompass acute and cyclical increases to academic and ancillary workloads at certain stages of the calendar year.

Furthermore, given that sub-optimal sleep, inadequate fruit and vegetable intake, and excessive sitting time were identified as the second, third and fourth most prevalent health risks amongst both students and staff, it is imperative that future research adopts a multi-level paradigm to examine these formative lifestyle domains through a holistic, systems-oriented and ecological lens, in alignment with a settings-based HU strategy (Dooris et al., 2014). HEIs are particularly influential ‘lifestyle’ settings, whereby substantial cohorts of students and staff engage in habitual choices and health behaviours within the context of the distinct microcosm that is the respective HEI campus environment (Dooris
et al., 2014; Roy et al., 2019). Although determination of causality was beyond the scope of the current descriptive case study, there is evidence to suggest that exposure to the current case HEI’s structures and culture may have been associated with poor and irregular sleep patterns, insufficient capacity to adhere to recommended dietary guidelines (fruit and vegetable intake), and a normative culture of sedentary behaviour.

This hypothesis of ‘mutual exposure’ was further supported by the qualitative similarities observed in the ‘most-to-least’ favourable health metrics (general health, mental health, recent sleep quality) that were rated on identical 5-point Likert scales (‘very good’ to ‘very poor’) by students and staff respectively. General health was rated most favourably (27.7% of students and 40.2% of staff rated this parameter as ‘very good’), followed by mental health (22.1% of students, 37.7% of staff). Sleep quality was rated least favourably by both cohorts, whereby only 12.6% of students and 21.5% of staff rated this parameter as ‘very good’. Coupled with the insufficient sleep duration (<8 hours during the working/college week) reported by 79.3% of students and 82.2% of staff, it is apparent that the majority of the current case HEI’s campus population exhibited sub-optimal duration and/or quality of sleep. Disrupted sleep can precipitate a myriad of short and long-term sequelae, such as an up-regulated stress response, depression, anxiety, increased cardio-metabolic risk, and the exacerbation of gastro-intestinal conditions (Medic et al., 2017). More detailed evaluations of the current case HEI population’s sleep patterns are urgently warranted to ascertain the extent to which exposure to the higher education environment may negatively impact sleep hygiene and maintenance of consistent circadian rhythms.
As a surrogate indicator of dietary quality (Aljadani et al., 2013), it was worrying to observe the sub-optimal fruit and vegetable intake reported by the majority of both students and staff (74.9% of students and 62.1% of staff). In light of the protective effects of sufficient fruit and vegetable intake against all-cause mortality (Aune et al., 2017), further research is urgently required to determine why substantial proportions of the current highly educated cohort did not attain such a well-publicised dietary metric of at least 5 servings per day. In this regard, both cohorts also reported poor perceptions of their agency to engage in healthy nutritional choices within the context of the case HEI’s food environment (only 38.7% of applicable students, and 45.7% of applicable staff definitively reported a perception that the HEI’s F&B facilities enabled healthy choices).

A perceived lack of access to healthy dietary options was also described by both students and staff within the qualitative comments, whereby students outlined financial mediators precipitating unhealthy dietary choices, and staff referred to a perceived imbalance between the availability of unhealthy versus healthy foods. The current study’s findings were broadly consistent with those reported from a dual-cohort study to evaluate staff and students’ perceptions of the campus food environment within a HEI in New Zealand (Roy et al., 2019), where cost and perceived value were stated determinants of food purchasing.

In addition, participants expressed a preference for the provision of clear nutritional information to guide decisions within the campus food environment, which appeared to comprise of energy-dense foods that lacked variety (Roy et al., 2019). The majority of the current case HEI’s F&B facilities were not under the direct remit of the HEI’s executive management, and an objective assessment of the nutritional quality of the dietary options available to students/staff was beyond the scope of the current study. Given the substantial proportion of students and staff who appeared not to habitually engage with the F&B facilities (26.9% of students reported spending be-tween €5-10 per
week within campus F&B outlets, 26.9% of staff spent less than €5), it is possible that misperceptions regarding the availability of healthy dietary choices existed in this regard, and that some students/staff were simply not familiar with the full suite of nutritional offerings. Regardless, it is imperative that any future health promotion policies within the current case setting, or similar HEIs elsewhere, encompass and positively engage with all relevant stakeholders in the campus food environment as a fundamental strategic priority.

6.6.2 Cohort-Specific Challenges to Address

Hazardous drinking (41.4% vs. 15.0%), negative mental health (40.2% vs. 15.4%), and tobacco smoking (25.5% vs. 7.7%) were substantially more prevalent amongst students than staff. This is consistent with the abundance of international literature pertaining to risky patterns of alcohol consumption that have been reported amongst student cohorts (Heather et al., 2011; Jones et al., 2001; Kypri et al., 2002; Lebreton et al., 2017). The findings of the current study also provide a clear rationale for the continued delivery of high-visibility educational initiatives to students of the case HEI outlining the physiological risks of excessive alcohol consumption (Paton, 2005), in addition to alcohol-related harms such as accidents, injury, damage to personal relationships, and financial hardship (O’Dwyer et al., 2019).

Although collective risk-related BMI categories constituted the fifth most prevalent ‘risk’ amongst both cohorts, there were discrepant qualitative presentation patterns between students and staff in this regard. The prevalence of ‘underweight’, defined as a Body Mass Index of <18.5 km/m², was 3.3% amongst students. In contrast, no staff member who provided valid height and body mass data was calculated to be underweight. Therefore,
the cumulative BMI risk prevalence (49.4%) amongst staff was constituted entirely by ‘overweight’ (35.4% vs. 27.2% of students) and ‘obesity’ (14.0% vs. 11% of students). Further dual-cohort research, utilising objective rather than self-reported measures, is required to investigate the correlates of all risk-related BMI categories (both underweight and overweight/obesity) within campus populations. In particular, studies should also investigate the extent to which socio-economic status (SES) may mediate BMI amongst HEI students and staff, given the robust evidence supporting the association between low SES and overweight/obesity (Mohammed et al., 2019). Notwithstanding the possibility of dysmorphic perceptions and/or disordered eating patterns, financial mediators and further elements of the ‘higher education’ lifestyle could simultaneously influence students’ under-nutrition (financial scarcity and/or heavy workloads) and both cohorts’ over-nutrition (excessive consumption of cheaper, calorie-dense foods) within campus food environments.

With regard to psychological indices, disparate distribution patterns in mental health scores and health-related perceptions were also observed between students and staff. Although relatively equal proportions of students/staff failed to reach the EVI scale threshold score to constitute ‘positive mental health’ (83.7% students vs. 83.0% staff), a greater proportion of students (40.2% vs. 23.5%) were deemed to exhibit ‘negative mental health’ based on Mental Health Index-5 index scores of ≤56/100. This propensity towards a more negative presentation of mental health symptoms amongst students was further evidenced within participants’ self-ratings of ‘mental health’. In this regard, 12.6% of students rated their mental health as either ‘poor’ or ‘very poor’. In contrast, only 2.6% of staff rated their mental health as ‘poor’, and no staff member rated this particular metric as ‘very poor’. Furthermore, the mean health perceptions index (HPI) score amongst
students, which was based on the cumulative Likert ratings of participants’ general health, mental health, and recent sleep quality, was also lower (and therefore less favourable) than the mean score of staff. Stratifying the student cohort by sex, the HPI scores of females were significantly (p<0.05) lower than those of males, but there were no significant ‘between-sex’ differences in HPI scores observed in the staff cohort. The relatively higher staff mean HPI was observed in a staff sample that was comprised of a substantial proportion of females (60.2%).

It is possible that students’ less favourable self-perceived health metrics and MHI-5 scores were mediated by heavy academic workloads, perceived personal pressures, and stresses associated with the higher education environment such as adjusting to new relationships and structures, coupled with financial scarcity (El Ansari, Stock, Snelgrove, et al., 2011). In contrast, the staff cohort traversed a more stable and financially secure life stage that was not subject to the equivalent ‘coming of age’ pressures experienced by students. It is also plausible that, with a greater accumulation of life experience (84.2% aged ≥ 35 years), some staff may have developed a greater psychological and personal resilience, counterbalancing the more negative mental health symptoms to a certain extent. Qualitative investigation into aspects of the student experience, such as social connectedness, extant demands of semesterisation, socio-economic contexts, and ‘cost-of-living’ factors would be prudent to inform future policy directions and thematic priorities for the case HEI’s HU strategy.

In addition, further qualitative studies are required to explore the phenomenological experiences of both students and staff with regard to accessing relevant mental health supports and services within HEIs. A number of qualitative contributions from students
in the current study referred to a perceived lack of access to counselling services within the HEI. Certain welfare supports and medical services were restricted to full-time students only, and not accessible to students who held part-time registration. In a similar vein, the campus medical centre and counselling service were not accessible to staff, and therefore the internal support pathways available to staff of this multi-campus case HEI remained poorly defined.

Given the lack of access to the institution’s medical centre and/or internal formal mental health assistance pathways for staff, it is also necessary to consider the possibility that some staff may have minimised their reporting of negative mental health symptoms due to privacy concerns, fear of stigmatisation, and/or a subconscious social desirability bias. This is consistent with the findings of a dual-cohort investigation into mental health stigma within two HEIs in Australia (Wynaden et al., 2014), where 89% of the 270 HEI staff participants reported that they would not disclose a mental health issue to their employer, which was a comparatively higher proportion than the 76% reported amongst the study’s concurrent sample of 201 students aged from 17 to 51+ years. It was also pertinent to note that older students experienced mental-health discrimination significantly more frequently than younger students (Wynaden et al., 2014). It is plausible that similar generational differences existed in the current study, whereby the relatively younger student cohort felt more empowered than staff to disclose poor mental health. Future research in this domain should investigate the underlying mechanisms for the greater prevalence of negative psychological symptomatology amongst students relative to staff, despite the relatively equal proportions of both cohorts who did not reach the threshold to constitute ‘positive mental health’.
Given the worryingly high prevalence of severe anxiety (38.4%) and depression (29.9%) reported by a recent study of 3,340 HEI students in Ireland (Price et al., 2019), the current study has also provided a continued rationale for future initiatives/interventions pertaining to positive psychology and resilience. Recent research amongst a cohort of 1,743 undergraduate HEI students in China reported a significant association between higher resilience and more favourable coping strategies (Wu et al., 2020). Although merely a speculative association, the more favourable perception patterns observed in the staff cohort relative to students was suggestive of an apparent reduction in (i) severity and (ii) between-sex differences in negative health perceptions with increasing age and/or life experience. Given the unique insight into the intricacies and challenges of the current HEI setting shared by students and staff, it may be useful to explore the feasibility and efficacy of dual-cohort resilience building initiatives, incorporating staff-student mentorship programmes and/or partnerships to develop more universally relevant health promoting policies. A staff-student mentorship programme may be particularly valuable to explore amongst females, given that female students exhibited significantly poorer health perceptions, yet this between-sex difference was no longer evident amongst the predominantly female (60.2%) sample of staff, whereby the overall mean health perceptions index of staff was higher (more favourable) than that of students. There is an expansive body of literature outlining the mutual benefits of student and staff partnerships within the domain of teaching and learning (Bovill, 2019), and such partnerships could translate particularly well to future mental health initiatives and activities within the current case HEI, in a controlled and rigorously evaluated context.
6.6.3 Consultation, Partnership and Enabling Representative Participation in all HU Activities

Enabling equitable participation and securing multi-level stakeholder representation in all research and advocacy activities are fundamental aspects of the HU approach (Dooris et al., 2010). However, preliminary analyses underpinning the current study were indicative, even at this early phase, of the need to monitor, and strategically control for, (i) demographic (such as sex) and (ii) ecological barriers (such as academic workloads) to participation in all aspects of campus health promotion activities. With regard to research activities, both student and staff questionnaire instruments were disseminated via email to all eligible addresses listed within institutional datasets (Bickerdike et al., 2019; 2022); a ‘whole system’ sampling approach intended to provide all individuals with an equitable opportunity to participate in a seminal baseline wave of data collection. Interestingly, females were over-represented within both student and staff participant samples. This was consistent with the findings of previous research that investigated gender differences in response rates to an online questionnaire distributed to 981 full-time faculty within a US HEI (Smith, 2008). In that study, it was hypothesised that the over-representation of female respondents observed may have been attributable to females’ gender-mediated inherent gravitation towards ‘knowledge sharing’ social exchanges within online environments.

In terms of non-research related participation in future campus health promotion offerings/activities, a greater proportion of staff (66.9% vs. 55.9% of students) reported an interest in attending ‘recreational exercise’ and/or ‘sports for fun’ under the remit of a future campus health promotion initiative. Within both cohorts, a greater proportion of females indicated an interest relative to males; 57.8% vs. 54.0% (students), and 69.4%
vs. 63.2% (staff). ‘High-visibility’ health promotion offerings, such as recreational physical activity, are fundamental mechanisms of securing stakeholders’ participation and ‘buy-in’ to the demonstrative value of the HU approach (Dooris et al., 2010). Worryingly, however, the current findings suggest that substantial proportions of both students and staff, particularly males, may decline to participate in such activities from the outset. In previous work that investigated the health and lifestyle behaviours of the current student/staff cohorts in greater depth, it was reported that ‘insufficient time’ was the predominant barrier to undertaking more physical activity; reported by 51.6% of students (Bickerdike et al., 2019), and 37.5% of staff (Bickerdike et al., 2022). It was also found that a greater proportion of male students (15.3% vs. 9.9%) and male staff (44.0% vs. 30.3%) perceived that they already engaged in sufficient PA (Bickerdike et al., 2019; 2022), which may have accounted for the lower perceived interest in further recreational PA activities reported by males in the current study.

From an ecological perspective, heavy academic workloads were identified by both student and staff participants within the qualitative contributions in the current study. The apparently pervasive workloads borne by students and staff in the current study were further evidenced by the poor sleep patterns exhibited, in addition to the substantial proportion who did not meet the ‘positive mental health’ threshold scores on the EVI instrument (IPSOS MRBI & Dept. of Health, 2016a; Ware et al., 1993). Previous work pertaining to the case HEI setting also alluded to timetabling constraints and workload-related matters as barriers to staff members’ participation in a campus-based physical activity intervention (Bickerdike et al., 2018).
Finally, as a means of facilitating ‘whole-university’ participation, any efforts within HEIs to implement the HU framework should undertake to advocate for the equitable distribution of resources to enable health and well-being across all campuses of the current HEI setting. In the current study, there appeared to be a perceived sense of disconnect between the ‘primary central campus’ (PCC) and the smaller satellite campuses (SCs), which were located at distances ranging from 4 to 48 km from the PCC. Within the qualitative free-text contributions, a number of students made references to the relative isolation and a perception of systemic inequity amongst students of SCs (“…..it feels very isolated from the rest of the college, as if we’re not part of it”, postgraduate student, SC). Quantitatively, however, this did not translate into any statistically significant differences in students’ health perceptions index (HPI) scores between the PCC and the SC (M 10.97 vs. M 10.66, p>0.05). In contrast, although the theme of campus-based disconnect was not as apparent within the staff qualitative contributions, PCC staff exhibited significantly higher (indicative of more favourable cumulative perceptions of general health, mental health and recent sleep quality) HPI scores relative to staff of SCs (p<0.05). In terms of quantitative health risk, there were no statistically significant differences in total health risk index (HRI) scores between PCC and SC individuals, within either the student or staff cohorts.

Moving forward, the current case HEI will need to examine and address the perceived disconnect experienced by SC students. In addition, staff of SCs should be prioritised in future health studies and interventions, given their significantly poorer perceptions of health relative to PCC staff. From a direct organisational perspective, previous research has reported significant associations between students’ sense of belonging and academic motivation (Freeman et al., 2007), thus providing an additional academic rationale for
whole university’ health-related initiatives to foster a greater sense of organisational commitment and cohesion amongst all sub-cohorts of both students and staff.

6.6.4 Leveraging the Built Environment

Typically comprised of a suite of open-spaces and multi-purpose facilities, HEIs have been proposed as potentially efficacious built-environment contexts within which to enable health-promoting behaviours, such as physical activity (Plotnikoff, Collins et al., 2015; Plotnikoff, Costigan, et al., 2015). As a baseline exploratory study within the context of a broader research strategy, the evaluation of the built environment in the current study was confined to (i) the case HEI’s physical activity (PA) facilities and (ii) the broader food environment from the perspective of enabling healthy nutritional choices. Collectively, it appeared that substantial proportions of the current population did not habitually utilise or interact with the PA facilities and/or the food environment. Although recreational PA facilities were located on both the Primary Central Campus (PCC) and the Satellite Campuses (SCs), access was not universal, and in some cases facilities were not accessible to part-time students (the gymnasium facility on the PCC, for example). A number of ancillary PA facilities were subject to restricted terms of access (one PCC gymnasium facility was restricted to ‘elite’ scholarship athletes for example, and many of the PCC’s pitch and/or athletics track facilities re-quired central booking through the Sports Administration Office located on the PCC).

Surprisingly, the majority of both students and staff reported that they did not attend any gym or leisure facility (58.0% of students, 55.2% of staff). Comparatively, recent research investigating the use of gymnasium facilities across three universities within the UK
reported that only 29.3% of a sample (n=3,396) of facility members (students, staff and family members of staff) had attended their HEI’s respective facility within 12 months of data collection (Rapport et al., 2018). Furthermore, in a single HEI in the USA, 46.6% of a sample of 657 staff were classified as ‘current users’ of the campus gym facility (Brown et al., 2014). In the current study, more than half of the individuals who did attend a gym/leisure facility reported that this was only at an external (non-HEI) private facility (52.8% of students, 57.5% of staff). These findings were suggestive of an extant culture within the case HEI whereby personal exercise and physical activity were viewed as extraneous leisure-time pursuits, distinct from the HEI’s remit. Further to this, the high levels of daily sitting time reported by both students and staff in the current study were also indicative of an operational structure within the HEI that was sedentary by design. Interestingly, these findings are similar to those of recent research that evaluated the impact of the campus built environment on PA behaviours of students within two HEIs in Germany (von Sommoggy et al., 2020). In that study, it was concluded that the potential of the campus built environment to enable physical activity was largely under-realised.

As part of the future development of any HU initiative within the case HEI, it is imperative that all constraints and barriers to engagement with built-environment PA facilities are examined and addressed. Given the well-established relationship between PA and reduced risk of non-communicable diseases (Warburton et al., 2006), reduced all-cause mortality (Ekelund et al., 2019), and improved psychological wellbeing (Zhang & Chen, 2019), it would be pertinent for the current case HEI, in addition to similar settings, to enable and embed a visible culture of active movement within core activities and structures.
In relation to interactions with the case HEI’s food environment, there were consistent
references to a perceived lack of healthy nutritional options described by both students
and staff within their qualitative contributions. Frequency of use of the HEI’s food and
beverage facilities was estimated via participants’ self-reported monetary spend, and the
categorical distribution of these data were mixed. For example, 26.9% of students (n=347;
26.9% of relevant questionnaire item respondents) reported a weekly spend of between
€5-10, and 26.9% (n=66) of staff reported a spend of less than €5 per week. Concurrently,
almost one in five students/staff reported a weekly spend of at least €20 (17.7% of
students and 20.4% of staff, respectively). More defined studies are required in this
domain to establish direction of causality in this instance; whether frequent use has
resulted in poor perceptions rooted in experience of same, and/or whether poor and/or
misinformed perceptions of the entire suite of dietary options encompassed within the
HEI’s food environment have precluded participants’ frequent engagement with these
outlets.

6.6.5 Creating value: HU as a Vehicle Through Which to Address Broader
Socioeconomic Challenges

Aligned with the Irish government’s national HP strategy (Healthy Ireland, 2021a), the
Irish Healthy Campus Framework, which is in turn explicitly based on the HU principles
comprised within the Okanagan Charter for Health Promoting Universities and Colleges,
necessitates an explicit commitment by senior leaders to embed health across all facets of
a HEI, including across “leadership, strategy and governance” (Healthy Ireland, 2021b,
p.3). In practice however, demonstrating the value of, and securing management-level
commitment to, HU initiatives may be constrained by a perceived disconnect and

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distinction between the whole-system ideals of the HU and the fundamental ‘core-business’ of a HEI (Dooris et al., 2010; 2019). Notably, the current case HEI did not have a designated ‘Healthy University’ policy and/or a human resource dedicated to health promotion (Bickerdike et al., 2018). Further qualitative studies are urgently warranted to explore the case HEI management’s perceptions of campus health promotion initiatives in a general sense, and more specifically the value, if any, of implementing a HU framework. This would facilitate a more overt, evidence-based alignment of future HU policies and activities with concurrent organisational KPIs and senior management priorities. Internally, the current findings will form the basis of future research that serves to investigate management perceptions of, and reactions to, the health risk prevalence patterns of both students and staff. Dooris and colleagues’ HU conceptual framework (2010) also outlined the need to identify and respond to “public-health drivers” and the necessary equilibrium between the implementation of “high-visibility” campus initiatives with macro-level policy change and senior management support (pp.8-9). Through the implementation of its dual cohort approach, the current study has further ‘scaled up’ and substantiated the distinct public-health rationale for a coordinated health-promotion policy within the case HEI, as a prominent regional setting within which to contribute towards broader societal efforts to address pertinent public-health challenges that threaten sustainable development and economic prosperity.

6.6.6 Practical Implications and Future Research

The current study is the first in Ireland to conduct a socio-ecological, dual-cohort investigation into the health behaviours and metrics of both students and staff in the context of their shared HEI setting. From a methodological perspective, two novel ‘index’
metrics were calculated to meaningfully compare co-occurrence of health ‘risk’
behaviours (health risk index) and self-perceptions of three key health metrics (Health
Perceptions Index: general health, mental health, recent sleep quality). The striking
similarities in the most prevalent health ‘risks’ amongst the current heterogeneous
populations of students and staff were suggestive of mutual exposure to ecological
determinants within
the case HEI that systematically negated the campus population’s capacity to achieve
positive wellbeing, attain sufficient sleep, engage in healthy dietary behaviours, and
minimise habitual sitting time. Further dual-cohort, mixed-methods longitudinal studies
are urgently required to identify and address the environmental barriers to positive
lifestyle practices within contemporary HEIs.

6.6.7 Limitations

Although novel in its breadth, the current study was a baseline mixed-methods
exploration of cross-sectional data. It was therefore not possible to establish causality for
significant findings, or for any apparent associations between health-related metrics and
setting-specific determinants.

In relation to the data derived from the student and staff questionnaire instruments as
described elsewhere (Bickerdike et al., 2019; 2022), it is possible that selection bias was
observed, and these data should be interpreted in the context of the (i) convenience
sampling strategy, (ii) low response rates, and (iii) progressive decline in responses due
to the substantial length of each instrument. It should also be borne in mind that cohort
comparisons in terms of overweight/obesity were conducted based on self-reported height
and body mass within each instrument. Although the student instrument was incentivised, similar ‘final’ response rates (inclusive of only those who progressed to at least the final stage of their cohort’s questionnaire) were observed amongst both the student and staff cohorts (13.7% and 13.5%, respectively). To minimise the likelihood of selection bias and maximise the generalisability of findings to the broader student/staff population, more purposive non-probabilistic sampling techniques may be merited in future waves of similar data collection to inform the implementation of the HU framework within the case HEI. In addition, students and/or staff who experienced health-challenges, or those experiencing acute health related issues at the time of data collection, may have elected not to respond to the online questionnaires. It is possible, therefore, that the true prevalence of the concerning dual-cohort health risk metrics identified in the current study could be greater than reported. Concurrently, students/staff with an innate interest in health and wellbeing may have been more likely to respond to the respective questionnaire instruments.

In addition, the dichotomisation of variables for the purposes of calculating the ‘health risk index’ assumed a somewhat ‘binary’ nature of risk, and did not provide for any weighting of variables and/or the stratification of risk itself. Moreover, thematic analysis of the qualitative contributions was focused upon the identification of thematic areas for further investigation, and these data were not necessarily wholly representative of the broader student and staff populations. Finally, inferences in terms of habitual interactions of students and staff with, and within, elements of the case HEI’s built environment were drawn solely on the basis of self-reported perceptions of, and interactions with, (i) campus physical activity facilities, and (ii) food and beverage outlets. In the context of the current exploratory case study, these variables were perceived as pragmatic surrogate indicators
to primitively explore the frequency, and nature, of interactions within these environmental contexts of the case HEI. Future studies as part of the current programme of research to inform a HU initiative should adopt a more comprehensive and holistic paradigm in this regard, and conduct more rigorous and comprehensive multi-component campus audits (Horacek et al., 2011) to ensure that future built environment policies are empirically informed (Murphy et al., 2021).

Notwithstanding these limitations, this research has served as a seminal, empirical guide for the next phase of establishing the case HEI as a HU, in a domain where a lack of such research and pragmatic theorisation has been documented as a barrier to the adoption of the settings approach to health promotion within the higher education sector (Newton et al., 2016).

6.8 Conclusion

This novel research has identified five strategic priorities to guide and substantiate the thematic content and strategic direction of the case HEI’s HU initiative; (i) appreciate and address the universal health challenges and common prevalence patterns identified amongst both students and staff, (ii) continue to allocate resources towards student-specific challenges such as risk-taking behaviours and psychological distress, (iii) enable equitable demographic and cross-campus participation by purposeful design, (iv) engage with all built environment stakeholders to leverage health-promoting potential, and (v) create value by strategically positioning the HU initiative within the context of broader societal challenges. This study has also outlined a clear rationale for dual-cohort research encompassing both HEI students and staff, as mutual stakeholders in, and prospective beneficiaries of, HEIs that serve to enable health and well-being by design.
This research was indicative of the mutual exposure of both students and staff to socio-ecological barriers to positive health within the environmental structures of the case HEI. Worryingly, substantial proportions of both cohorts appeared to forego healthy lifestyle practices in lieu of fulfilling their educational responsibilities and/or occupational roles within the setting. Striking similarities were also observed in terms of the presentation of the five most prevalent health risk metrics within each cohort. A paradigm shift towards addressing these universal, environmentally mediated health challenges should serve as a fundamental strategic priority for management within the case HEI, and indeed within similar organisational settings.
Chapter 7

A Qualitative Investigation into the Lived Experiences of Students and Staff within an Irish HEI, to Inform a Triangulated Model of the Determinants of Health.
7.1 Introduction

Health and wellbeing are influenced by a myriad of social determinants, ranging from individual-level biological factors to broader socio-cultural issues such as political climates, education, and economic stability (Braveman & Gottlieb, 2014). Health has also been previously conceptualised as the complex destination of a continuous and dynamic ‘journey’, that traverses an individual’s genetic susceptibility, health-related literacy, habitual behavioural choices, and broader socio-cultural context (Rowlands et al., 2017).

Higher Education Institutions (HEIs) constitute microcosmic entities subject to perceived social and behavioural norms, which are further influenced by cultural, organisational and built-environment factors (Dooris, 2001; Newton et al., 2016). As both prominent centres of learning and workplaces, HEIs have been called to action to leverage their adjunctive potential as health promotion settings, and to embed health and wellbeing within all aspects of their core operations, strategies, policies, and cultures (Okanagan Charter, 2015). In Ireland, the magnitude of the higher education sector is considerable, and a recent Central Statistics Office (CSO) publication noted that the proportion of young adults aged 25-34 who have been conferred with a HEI award (58%) exceeded the EU-27 average of 41% (CSO, 2021). In 2020/21, there were 245,600 student enrolments within Irish HEIs, which constituted an increase of 17.4% since 2014/15 (O’Shea, 2021). Investigating and addressing the socio-cultural determinants of health within the sector is, therefore, of public health interest, given the collective scale of the health-related behavioural decisions habitually undertaken within Irish HEIs by sizeable cohorts of students, staff and indeed members of each HEI’s extensive catchment community.
However, it is well-established that risk-taking behaviours appear to be interwoven within the newly-autonomous lifestyle of the quintessential HEI student, and there has been an abundance of Irish and international literature documenting concerning quantitative patterns of students’ risk-related drinking (Davoren et al., 2015; Hope et al., 2005; Wicki et al., 2010), illicit drug use (Byrne et al., 2022), physical inactivity (Ramírez-Vélez et al., 2015; Whatnall et al., 2020), inherently sedentary behaviours during the transition to higher education (Bennasar-Veny et al., 2020), and sub-optimal dietary quality, as evidenced by surrogate metrics such as habitual fruit and vegetable intake (Hilger et al., 2017). Moreover, the higher education years have been postulated as a particularly risky time for increases in body mass (Beaudry et al., 2019; Deliens et al., 2019; Olansky et al., 2021), which in turn could pose a risk to future health, and increase the risk of a plethora of non-communicable diseases (NCDs) (Nyberg et al., 2018).

Although comparatively under-researched relative to HEI students, concerning health risk factors have also been reported amongst international cohorts of HEI staff, such as sedentary behaviours (Faghy et al., 2022), harmful patterns of alcohol consumption (Awoliyi et al., 2014), adverse cardio-metabolic profiles (Brandão et al., 2022; White & Jacques, 2007), and overweight/obesity (Freedman & Rubinstein, 2010; Perusse-Lachance et al., 2010).

The inherent psychological stressors associated with higher education have also gained prominence within the literature (Deasy et al., 2014; Ohadomere & Ogamba, 2021). High levels of occupational stress and psychological distress have been consistently exhibited amongst HEI staff cohorts (Biron et al., 2008; Devonport et al., 2008; Mark & Smith, 2012), which is unsurprising given the reduction in academic autonomy and increased
pressure within the contemporary higher education environment (Biron et al., 2008; Kenny, 2018). Similarly, HEI student cohorts are also habitually exposed to psychological stressors inherently embedded within the higher education experience such as academic pressures, financial difficulties, and uncertainty regarding the future (Beiter et al., 2015; Deasy et al., 2014). HEIs have also been referenced within broader societal and academic discourse pertaining to mental health and wellbeing, as conduits through which to enable early identification of mental ill health, and to facilitate prompt referral to appropriate community mental health services (Hill et al., 2020). In terms of health promotion (HP), a global research consortium has emerged to investigate the prevalence and determinants of mental ill-health amongst HEI students (Cuijpers et al., 2019), and the rationale for mental health interventions within HEIs is substantiated by socio-economic evidence (Eisenberg et al., 2009), in addition to a broader educational rationale to enhance student engagement (Karwig et al., 2015).

Due to their autonomous agency to implement campus-wide policies, and to enable health-promoting engagement with, and within, substantial built environment facilities, HEIs have been posited as strategic settings within which to positively influence population health and wellbeing (Dooris & Doherty, 2010). This could serve as a valuable sectoral contribution towards (i) amelioration of modifiable behavioural NCD risk factors such as physical inactivity, unhealthy dietary patterns, harmful alcohol consumption and tobacco smoking (WHO, 2022a), and (ii) the attainment of the UN Sustainable Development Goals (SDGs), which explicitly encompass health and wellbeing (UN 2015). Pragmatically, however, health-related behaviours, lifestyle parameters and psychological indices of diverse campus cohorts are exhibited within, and mediated by, the ecological and cultural context of a HEI’s broader environment (Bauer et al., 2006).
Extending HP action beyond refined and time-limited interventions to successfully implement an overarching ‘settings approach’ across all strata of a HEI (referred to as the ‘Healthy University’ (HU), ‘Health-Promoting University’ (HPU) and/or ‘Healthy Campus’ approach within international literature), involves a macro-level paradigm shift towards salutogenesis by default; encompassing culture, environment, and operations (Newton et al., 2016; Okanagan Charter, 2015).

Robust quantitative analyses, further enhanced and complemented by ‘real-world’ qualitative exploration, has been proposed as a prudent methodological approach to attain a greater understanding of complex health-related determinants (Deasy et al., 2014). As outlined in Chapter 1, the overarching aim of this thesis is to serve as a mixed-methods (QUAN-QUAL) needs assessment to empirically inform the strategic development of a settings-based HP initiative within a multi-campus HEI in Ireland. The socio-ecological paradigm of this research is, therefore, firmly aligned with the ‘whole-campus’ ethos of the Irish Healthy Campus Framework (Healthy Ireland, 2021b), and indeed international ‘Healthy Campus’ and/or HU theoretical settings-based literature (Doiris et al., 2010, 2014, 2019).

Chapters 4 and 5 have presented and discussed a plethora of concerning quantitative health-related metrics and parameters exhibited by samples of students (n=2,267) and staff (n=279) of the case HEI. Students appeared to exhibit particularly worrying risk-related behaviours (hazardous alcohol consumption, drug use, sexual behaviours), in addition to notable psychological distress (Bickerdike et al., 2019). Health and lifestyle metrics of staff were found to cluster along a continuum, whereby those statistically grouped within the least healthy Cluster (i.e., ‘Sub-Optimal’) exhibited significantly (i)
more stress, (ii) higher BMI values, and (iii) greater levels of absenteeism than those within the healthiest Cluster (‘Healthy Lifestyle’) (Bickerdike et al., 2022). Moreover, when students and staff were considered concurrently (Chapter 6), several health-related challenges were surprisingly similar, despite marked demographic heterogeneity between both cohorts. As discussed in Chapter 6, these ‘common’ challenges (low energy/vitality, poor and irregular sleep patterns, excessive sitting time, sub-optimal fruit and vegetable (F&V) intake, and overweight/obesity) were suggestive of a ‘mutual exposure’ to latent, yet unexplored, experiential barriers to health and/or pervasive psychological stressors embedded within the culture and context of the case HEI’s environment.

The Irish ‘Healthy Campus’ Framework strongly advocates that Irish HEIs consider and examine all constructs that determine and/or mediate the health and wellbeing of their respective campus populations by comprehensively consulting with all relevant stakeholders (Healthy Ireland, 2021b). However, there remains a notable dearth of Irish research investigating the lived experience narratives of students and staff within the contemporary higher education environment. As a result, the mediators and socio-cultural determinants of the risk-related metrics reported in Chapters 4-6 of this thesis remain largely unexplored. A paucity of data reporting on the perspectives and phenomenological experiences of the case HEI’s campus population poses a substantial barrier to the empirical design of a bespoke and ‘fit-for-purpose’ HP strategy.

Therefore, the purpose of this study was to facilitate a greater understanding of previously established quantitative metrics, by exploring and investigating the lived experience narratives of both students and staff within the case HEI. Specific research objectives were to (i) elicit participants’ personal definitions and/or perspectives of health and
wellbeing, (ii) examine the lived experiences of students and staff to identify extant barriers to, and/or facilitators of, health and wellbeing under the remit of the HEI, and (iii) triangulate these qualitative data with quantitative findings across the thesis to date, to derive a comprehensive ecological model of both overt and latent determinants of health and wellbeing, tailored to the case HEI. This empirical model will serve to guide the strategic design of multi-level research interventions, policies, and future initiatives under the remit of a cohesive HU-aligned health promotion strategy. This triangulated model will be of interest to practitioners and stakeholders who require pragmatic guidance in terms of the implementation and evaluation of the highly theoretical settings-based approach to HP within HEIs, and indeed similar organisational settings.

7.2 Methodology (see Chapter 3, pp. 155-166)

Within the overarching phased mixed methodology (QUAN-QUAL) employed within this thesis, the current study employed a qualitative design to investigate and further explore the socioecological determinants mediating the health and wellbeing of both students and staff of the case HEI (Chapters 4-6). This qualitative methodological approach has been discussed in detail in Chapter 3. In brief, however, a target population was identified following a purposive stakeholder mapping exercise, which was in turn informed by previous work (Bickerdike et al., 2018). Prospective participants were contacted via institutional email (or organisational email in the case of external parties) with a request to participate in either a semi-structured interview (IV) and/or focus group (FG). This email outlined the purpose and scope of the broader programme of research, and included a detailed Participant Information Sheet. Electronic consent forms were
completed prior to participation, and the study’s protocol was reviewed and approved (as part of the broader research study) by the Research Ethics Committee of the case HEI.

Using indicative scripts as structural guides (see Table 3.6 and Table 3.7), IVs and FGs were conducted and recorded remotely via a HEI-licensed Zoom account. Audio-only files were extracted and used to derive a verbatim, anonymised transcript for each IV/FG session. Raw data were then imported into the NVivo (Release 1.6.1) software package for thematic analysis, using a similar inductive-deductive approach to that of Dooris et al. (2020), in their qualitative study that explored the perceptions of a cohort of management stakeholders regarding the ‘Healthy University’ (HU) approach within international HEIs.

As illustrated previously in Figure 3.3 (p.166), inductive thematic analysis was first conducted across all items within the data corpus, in accordance with the recommendations previously outlined by Braun and Clarke (2006). Codes were then reviewed for accuracy and, where relevant and appropriate, either collapsed and/or merged. Phase two employed a quasi-deductive approach, whereby a theoretically rooted overarching structure was then applied, largely based on the hierarchal structure and premise of Dahlgren and Whitehead’s seminal model of the determinants of health as previously illustrated in Figure 2.1 (Dahlgren & Whitehead, 1991, 2021). In this process, codes were subsequently arranged into structured hierarchical themes and sub-themes, which corresponded to ascending levels of socio-ecological influence on health and wellbeing (individual, inter-personal, broader organisational, and sectoral).
The data corpus was derived from 16 individual semi-structured IVs (45-70 minutes’ duration), 2 dyadic interviews (n=4), and 4 FG sessions (n=14), comprised of both student and staff stakeholders (see Chapter 3 for a demographic breakdown of the sample). The sampling paradigm in qualitative research differs from quantitative investigations (Boddy, 2016), and the current study intended to elicit the views of key stakeholders until data saturation was reached, as opposed to constituting a quantitatively representative sample of the case HEI’s population.

However, it should be noted as an interpretive consideration from the outset that the sample of stakeholders who participated in the current wave of qualitative data collection were predominantly staff (n=25) and/or postgraduate students (n=4). Although all four post-graduate participants and six staff members were Alumni of the case HEI, there remained a relative under-representation of current undergraduate students (n=4; 1 dyadic interview, and 2 undergraduate students participated in a broader Students’ Union Officers’ focus group). This was largely attributable to scheduling and timetabling difficulties in terms of engaging with a cross-HEI sample of undergraduates, who were subject to extensive, and variable programmatic timetables during the semesterised academic year. As an additional bureaucratic barrier to recruitment, there was no cohesive mechanism whereby the lead researcher could obtain direct access to a singular database of cross-HEI undergraduate class representatives, and students were ultimately contacted on behalf of the researcher by a central administrator. It was therefore not possible to quantify, and/or verify the extent of cross-campus representation amongst, the cohort of students who received this communication. Moreover, it precluded the assertion of basic demographics, and further increased administrative burdens on prospective participants, who were requested to complete a Microsoft Form to confirm their interest, and to
indicate their academic programme, primary campus, and contact details (institutional email address).

As illustrated in Figure 3.3, the scope of the current study has extended to findings across a sub-set of four themes derived from the hybrid inductive-deductive analytical process, and focussed on the lived experiences and perspectives of participants regarding (i) the definition of health, and their experiences of health-related challenges (Theme 1 ‘Personal paradigms and perspectives), (ii) inter-personal relationships and interactions within the case HEI (Theme 2: ‘People and relationships within the HEI’), (iii) the HEI’s built environment (Theme 3: ‘Experiences within, and perceptions of, the built environment’), and (iv) macro-level organisational and sectoral determinants of health and wellbeing (Theme 4: ‘Sectoral and organisational determinants of health and wellbeing’).

Qualitative data were then triangulated with previously established quantitative findings to identify pertinent health-related determinants, essentially to determine the most strategic ‘levels’ of intervention, and to illustrate same in a visual schematic tailored to the case HEI setting (see Figure 7.1 and section 7.5 below).

7.3 Results

7.3.1 Theme 1: Personal Paradigms and Perspectives

Definitions of Health

Participants (both students and staff) shared holistic, multi-component, and largely positivist personal definitions of ‘health’ and/or ‘healthy living’. There were varying levels of salience placed upon specific health-related behaviours and domains such as
personal exercise, nutrition, sleep, mental wellbeing, and weight management. A sense of ‘balance’ was a common thread throughout participants’ conceptualisations.

“...maintaining a healthy lifestyle, as well as like keeping a good social life and work life and college life, keeping a good balance is definitely a very big part of it”
(FG17, Current UG Student & SU Officer)

“...the word that springs to mind for me is balance, and I’m not suggesting for a moment that I have it, but I think it’s being able to kind of work well, kind of eat well, sleep well, and enjoy your...play well, I guess for the want of a better word”
(FG01, Senior Academic, Head of Dept. [HoD])

Mental health and wellbeing were deemed to be intrinsically linked to overall health. However, one Professional, Management and Support Staff (PMSS) member perceived that mental and social wellbeing were under-represented in traditional perspectives of ‘health’, potentially as a result of cultural conditioning towards emphasising physical domains.

“I would start from the physical point of view and then branch out, which is what I think happens, most of the time, (with) services in this country and how they see health anyway (...) Yes, so it would be like, almost like a Venn diagram of the few different types, but they’d (all) intersect in one universe of health” (IV04, PMSS Manager)

Health was also viewed as essential to fulfil one’s personal and professional obligations. Whilst several students described a lack of agency to practice health-promoting behaviours (see Section 7.3.4 below), some staff were of the view that an individual is personally responsible and obligated to make time for ‘self-care’, and to proactively manage their health and wellbeing.

“...if you're not going to look after yourself, you're not going to be any good to your colleagues, to your students, or anything else as well” (FG08, Senior Management)
Social connectedness, identity, and community/citizenship connections were also embedded within participants’ definitions of health, as opposed to more refined physiological and/or objective definitions/metrics. Many perceived health as a state of happiness, fulfilment, and having the ability to meet the demands of daily life.

“It's not about being, dare I say, fat or thin, it's not about being a smoker or non-smoker as such, maybe some of it is and some of it's about being healthy in those senses because all of those things help us…but the ultimate goal of this is to be able to live a good life isn't it?”

(IV16, Senior Academic, HoD)

In addition, one Executive Management participant acknowledged the importance of health, wellbeing and social connectedness for organisational performance, cohesion, and productivity.

“I guess for us as employers and within a university (it’s) about interactions with people, so it's how people fulfil their duties, but also how we how we connect together, and I think that wellbeing has a huge impact on that” (IV05, Executive Management)

Health-Related Behaviours, Domains, and Challenges

Several risk-related behaviours and health-related domains were encompassed within the lived experience narratives and observations of both students and staff. Firstly, mixed perceptions of the prevalence of, and/or longitudinal trends in, overweight/obesity were evident. Some staff believed that body composition trends of students were healthier than previous decades, as a result of cultural shifts towards achieving the ‘ideal’ body aesthetic.

“…there’s talk about an obesity epidemic, but our students in general are pretty trim. Whether that’s due to us, or whether they’re training with a GAA club at home, I don't know, but they are…you know, thankfully, when you look at them, they're in reasonably good shape”

(FG03, Senior Academic HoD)
In contrast, another Senior Academic remarked on observable body mass gains amongst some students throughout the course of an academic programme.

“...you do find at times that students’, you know you can see it, that students’ weight goes up during that time (...) and you know everything in moderation, and you know I like a drink myself (but) we do see some students where their weight goes up” (IV02, Senior Academic HoD)

Both students and staff recalled engaging in poor nutritional behaviours as a somewhat reactionary behavioural choice to cope with specific stressors, and/or as being heavily influenced by certain elements of the HEI’s culture (such as being time poor) and/or the normative behaviours within one’s peer group or Academic Department. In this regard, students from a sports-related Department described being positively influenced by the perceived norm of bringing one’s own ‘healthier’ food to campus, but acknowledged that this culture may not predominate across the entirety of the university. Staff described a rushed pattern of eating, whereby sub-optimal choices were an outcome of being ‘time poor’. Notably, exposure to stressors, sub-optimal nutritional choices, and the subsequent effects of same on mood and wellbeing were outlined as being somewhat cyclical and interconnected by both students and staff.

“...what you might consume while you're (in) college…may then affect how you're feeling for the rest of the afternoon, so you know if you're not being exposed to, I suppose, healthy foods, and not kind of made (question) your, your thoughts maybe about what you're consuming, your day might end up feeling quite sluggish, quite tired, you might be unmotivated then for the rest of the evening” (FG14, Current PG student & UG Alumnus)

“I know just from my own experience in the way I am as a person, that if I have a negative interaction with someone, then I go into a place with that awful overhead lighting that's not flattering, and then I go into the canteen, I know I’m going to get sausages and beans and chips, and I’m going to get loads of them, and I’m going to get what they term a ‘fat’ coke. And I’m going to feel better for 15 minutes and then feel terrible” (IV04, PMSS Manager)
Mental health and wellbeing challenges were discussed extensively by both student and staff participants, either in terms of personal experiences and/or recalling the experiences of peers, colleagues or reporting staff. Stress appeared to be somewhat ingrained within the lived experience of the campus population, and was almost ‘expected’ within the HEI’s extant culture.

“…as a university student like you’re, you’re… I feel like they were probably the four most stressful years of my life” (FG15, Students’ Union (SU) Officer)

“…in regards to that full aspect of (the) mental strain that getting everything together (does) put on you (is really) stressful” (FG18, Current UG Student & SU Officer)

“… it is now almost unacceptable to be walking out of work saying I’m full of energy. You have to be coming out of work or college saying I’m exhausted, and you have to be stressed” (FG3, Senior Academic, HoD)

Further to this, it was suggested by one staff member that mental ill-health amongst the student cohort had become more severe and complex. Students’ most prevalent presenting complaints appeared to be depression, anxiety and suicidal ideation.

“mental health, mental health, mental health, anxiety, depression, stress (...) anxiety and depression are huge at the moment, and suicidal ideation within the two of them is very, very big. (I can’t) stress enough how much we work with suicidal ideation (...) I think, given the current climate, we have a lot of students coming to us and the need, the needs and their concerns are greater than the years that have gone past” (IV04, PMSS Manager)

Extant socio-economic challenges amongst the student body were proposed as being intrinsically linked to the complexity and severity of presenting mental health issues amongst students, in addition to further psychosocial stressors such as inequitable access to quality accommodation, insufficient financial capital to purchase educational resources, necessity to engage in external part-time work, and agency to engage in healthy nutritional and physical activity behaviours.
“…the kind of students that we have a greater representation of are from backgrounds where there’s generational issues with suicide and so on” (FG01, Senior Academic, HoD)

Although there was an acknowledgement of broader societal acceptance of mental health issues, there was some evidence that students and staff may have perceived and/or remained fearful of stigma, precluding open disclosure and discussion. In this regard, one PMSS Manager described a sense of secrecy, and the relative invisibility of mental health issues in the context of staff absenteeism.

“…they've been out for two weeks, and they come back and say ‘yeah I’m grand, yeah I’m fine’ and you say, ‘are you sure you are okay?’ ‘Yeah’. If they don’t tell, you can’t pry, you can’t ask them what it is (…) and the fact that (they) don't say you're probably a bit more curious, whereas if somebody is physically sick and obviously ‘look oh look I had x, y and z was wrong with me and I had to do this thing’, but maybe when it's mental health they're not, maybe so inclined to say it, you know?” (IV15, PMSS Manager)

Sub-optimal sleep also appeared to be a pervasive health challenge, consistently described as part of lived experiences within the HEI. Both students and staff recalled instances where work-related concerns either directly (consciously restricting sleep to meet workload demands) and/or indirectly (ruminations on work-related matters at night) impacted upon sleep quality and quantity.

“…I suppose yeah the sleep, the sleep aspect as well, it would be hard to incorporate everything into your day and get your full eight hours of sleep at night, especially if you've things to be worrying about like deadlines or assignments or things like that (…) I think that would be a big challenge for everyone as well, still, all the time, really” (FG17, Current UG Student & SU Officer)

“…we have long working hours, there are things that keep you awake at night, sometimes” (IV16, Senior Academic, HoD)

Erratic and dysregulated sleep patterns amongst students were also referenced by several staff as ‘red flags’ associated with acute mental distress, posited by one PMSS member
as being indicative of students’ collective difficulties coping with the direct, “fatigue of the (HE) experience” (IV07, PMSS). One Senior Management staff member recounted a recent episode of being contacted by a student via email at three o’clock in the morning.

“…you know there's often mental health issues for students as well, like I got an email from a student at three o'clock in the morning during the week there, I mean that's not normal behaviour either” (FG08, Senior Management)

In terms of physical activity and movement, both students and staff described the inherent and culturally embedded sedentary behaviours associated with core learning and occupational activities within the HEI.

“…basically all of my classes are done at like computers and I’d also imagine that like normal lectures are also fully done sitting at a desk” (FG10, Current UG Student)

“…we probably will sit at our desks because we feel we have so much to do” (FG3, Senior Academic, HoD)

One staff member recalled a specific instance where it was not possible to procure alternative ergonomic infrastructure to reduce occupational sitting time.

“…interestingly, back in the day so I worked at (an office abroad) for the bones of nine years and they had these sitting standing tables. When I went looking for them back in the day with (HEI Name) I was told, no that's an excess of expenditure, what do you want that for, you know?” (FG06, Senior Management)

Overall, there were multiple references to the concepts of ‘fitness’ and ‘exercise’ as part of student and staff lifestyles, and as a consciously undertaken health promoting behaviour. Both students and staff described having discovered physical activity as a behaviour through which to enhance their mood and wellbeing.
“…I definitely think that more emphasis should be put on the fact that physical exercise, all the endorphins that can occur from it like it’s definitely like it’s (definitely) something I’ve only realised recently as in like I never thought that physical exercise could have such an impact on how your day would go…” (FG17, Current UG Student & SU Officer)

“…my own self, personally, I found that the physical is really great to help the mental and then (it’s kind of) interactive, physical activity certainly, certainly helps with the mental health” (IV13, Executive Management)

Staff members highlighted adjunctive benefits of students’ participation in extracurricular sport within the HEI, such as social belonging and developing interpersonal skills

“…there's a whole pile more involved from the sports side in terms of socialisation and teamwork and team building and all that” (IV09, Executive Management)

Although not referenced within the contributions of students, staff perceived that the lived experiences of contemporary students trended towards greater promiscuity from a sexual health perspective.

“…we all know what 20 year olds get up to, (the) idea of maybe sexual health and stuff should be more than awareness” (FG1, Senior Academic HoD)

“…sexually they're probably a lot more precocious if that's the word, maybe than we were in our day (…) so they're dealing with, with a lot of stuff” (IV13, Executive Management)

Students’ excessive alcohol consumption was also discussed by several staff participants, some of whom were also cognisant of the dearth of alcohol-free social activities for students to engage in as an alternative.

“… quite distressing to see the amount of drink that students are consuming these days, it’s mad stuff like, it’s mad stuff and the way around that, you have to fight that with a positive attitude (…), get them involved in teams, get them involved in drama societies or choral groups or whatever…and put up that as an alternative lifestyle to students” (IV09, Executive Management)
“I think it's good that we don’t have a bar on campus maybe that's a positive step. But maybe we could promote and incentivise initiatives which are looking at (new ways) of decompressing…” (IV08, Senior Academic, HoD)

It was also suggested by staff that recreational drug taking had become more prevalent as a habitual behaviour associated with the quintessential student lifestyle.

“I’d say it's just (drugs) so widely used (...) it's just taken for granted (...) it's not just the few in the corner that are taking (drugs), it's kind of the, the majority are actually taking (drugs), which is actually very concerning I think” (IV01 PMSS Manager)

This was supported by the account of one student, who perceived higher education as

“...definitely a time where people… you know would start drinking a lot, they might start smoking and doing illicit substances and stuff” (FG11, Current PG Student & UG Alumnus)

Several staff participants described an acute awareness of getting older, and acknowledged either changes to, or evolutions of, their health-related concerns and needs over time, with a greater appreciation for the importance of maintaining physical fitness and optimal mental health and wellbeing. In addition, the need to remain inclusive of all age demographics in any potential health related activities or events was reiterated.

“I suppose for me, now as I’m kind of entering into a certain stage of life, you know, there are different…I have different needs now than what I would have we’ll say 10 or 15 years ago in terms of what I need to do to look after myself, so whether that's (...) a different kind of physical activity route or whether that's different foods or nutrition, or whatever” (IV01, PMSS Manager)

Secondly, the relative transience of a student’s exposure to the HEI setting compared to the multiple-decades of service of many staff members, was outlined as a specific rationale for the greater inclusion and consideration of staff as part of campus health and wellbeing policies/initiatives
“It’s a great time for our students, we should be encouraging them to get involved in all of this, (but) our students move on, our staff are there for 10, 20, 30, 40 years, so it’s maybe doing something for that” *(IV11, PMSS Senior Management)*

Finally, the quintessentially solitary nature of academic roles was explicitly acknowledged, in stark contrast to the student experience.

“So I think it's probably quite different for students, but certainly as a lecturer (...), potentially, it would be very lonely and I knew people when I got here so that was a huge help, but it could be terribly lonely couldn't it?” *(FG04, Senior Academic HoD)*

7.3.2 Theme 2: People and Relationships within the Case HEI

Vocational Aspect to Higher Education Roles

All grades of staff exhibited vocational perceptions of their roles to advocate for, and identify with, the complex needs of the student cohort, and to contribute towards the broader student experience within the case HEI. Some appeared to internalise an obligation to recognise students in difficulty, and to assist students to navigate through health-related and/or personal challenges. This was supported by further accounts of multi-level staff networks that served as informal, yet crucial first line supports for students in difficulty. This appeared to extend across the HEI, encompassing management, academic, support and administrative staff.

“...there was a student issue that arose earlier in the week (…) the colleague I was talking to about this (they) said I should have spotted that or whatever, and I said no you’re not a social worker you’re a college lecturer we do what we can here and we try our very best in that regard, but your job isn't to fix the world” *(FG01, Senior Academic, HoD)*

“What I would have found right, with students from a health point of view (it) extended to everybody in the house, you know? And I can remember specific instances where the (canteen staff) when I’d be over having my cup of tea or a cup of coffee they’d come to me, they’ll have spotted some (student) who's under pressure and we could do something about that, so (it’s) everybody's role to do it, and again the lecturer in the classroom, the secretary in the department, it is actually a universal role” *(IV09, Executive Management)*
However, one PMSS member proposed that ad hoc and individualised efforts in this regard blurred boundaries within the organisation, and exposed “well-intentioned” staff to complex situations and health-related difficulties far beyond their scope and remit.

“…the staff of (HEI Name) are so well intentioned and they’re really good people overall and they really want to support people and sometimes (…) you can go to a point where you go beyond your role and your specialism and even I was saying to (another entity within HEI) that you can end up in a place where you're going, oh God I’m out of my depth here” (IV04, PMSS Manager)

Implicit Role Modelling

Implicit and multi-level behavioural role modelling was described by both students and staff as a potent cultural enabler of health and wellbeing within the HEI. Firstly, role modelling from the most Senior Leaders within the HEI was consistently referred to as the most fundamental pre-requisite for a healthy normative culture. In this regard, it was perceived that the interpersonal interactions, behaviours and affect regulation exhibited by Senior Leaders effectively ‘set the tone’, and served to establish social norms that permeated throughout the organisation.

“…when (Former President Name) was President, you know I do think that that (their) personality and (their) kind of friendliness and openness to everybody, (...) whether you were a student, or staff, or visitor, you know that (they) kind of set a nice tone and that kind of culture of just being welcome, and openness and that type of thing, it sets the tone for how staff I think kind of work” (IV01, PMSS Manager)

“... new President has Tweeted about being involved in that walking challenge, the steps challenge, and things as well, so you know that is good guidance (and) coming from the top of the of the (sic) university” (IV02, Senior Academic, HoD)

Furthermore, it appeared that each stratum (Senior Management, HoDs, Academic Staff, Students) within the organisation were highly attuned to the behaviours of, and may have perceived a sense of needing ‘permission’ to engage in healthier practices from, both
those at the highest level of leadership within the HEI, and also those perceived to be within the next stratum of hierarchal influence.

“…for each of the layers of management to maybe appreciate how important it is for them to speak to the level below them about the importance of it (looking after one’s work-life balance). So, while I say it's important for me to speak to my staff about it and to say, you know, take your break, and enjoy your break and so on (…) but I suppose, even as somebody in a management level, it would be good if that came to us from the managers of us”

(IV02, Senior Academic, HoD)

“… maybe the challenge is to the university and to society and to society generally, we just need permission to be able to look after ourselves, do you know?” (IV11 PMSS Senior Management)

“…and it was actually professional services support staff who said, through (a health-related initiative that participant was describing in another HEI), we felt management had given us permission to leave our desks, and go on a walk and you think oh….it didn't occur to anyone, that permission had to be given” (IV12 Executive Management)

Many staff participants also articulated a perceived responsibility to positively influence the health and wellbeing of their reporting staff and/or student cohorts, as applicable. Those in management described a responsibility to role model for their staff, cognisant of their agency to authorise staff to take responsibility for their health and wellbeing, and to avoid internalising stresses, pressures and associated with the HEI’s broader culture.

“…how are we controlling that conversation or that rhetoric for our own staff and, and I think I’m probably more conscious of that in the last year than before, because I see the stress, I see the pressures (that are) coming on colleagues and it’s, it's okay to take time, it's okay to say no (…) we have a role in how we support that culture, or challenge that culture when it needs to be challenged as well” (FG07, Senior Management)

From a pragmatic perspective, some members of Senior Management outlined and described efforts to advocate for, and role model, healthier working practices such as avoiding scheduling lunchtime meetings, avoiding out of hours emails, and challenging the ‘always on’ working culture.
“I was at a meeting yesterday, where somebody said look the only time we’re all free is lunchtime, so we’re going to try to organise two meetings a week over the next number of weeks, and I said wait a minute guys; the reason people are free at lunch time is because it's our lunch time”

(IV11 PMSS, Senior Management)

“…with my own staff and with students, I try now, even if I’m working at night I put a delayed send on mails, so that it doesn't go out until after nine o'clock in the morning”

(IV02, Senior Academic, HoD)

However, in some instances it appeared that the advice provided to their staff did not align with the actual practices of Senior Management.

“Something that we as Senior Managers can do in terms of leadership is sometimes to, you know, we can be guilty of do as I say, not as I do” (FG06, Senior Management)

“I'm probably the worst to be giving advice (…) yeah you stay on your computer until 11 o'clock everything’ll be fine” (IV08, Senior Academic, HoD)

“… I have to respect that not everybody else, you know, wants to be working at the same hour maybe, as I do, but I say that, and I say that in my own teams (…) just because I’m doing (it), I don't have an expectation that you will do it” (IV16, Senior Academic Staff)

Students described observing lecturers/academic staff advocating for, or practising health-promoting behaviours, and a sense of wanting to emulate this as ‘impressionable’ young adults.

“…the reinforcement there from lecturers, and again I suppose that's kind of being like, you know, very impressionable people that (…) if we see someone doing something we're more inclined to do it” (FG14 Current PG student & UG Alumnus)

Lateral role modelling amongst the student cohort, both as a mechanism of health promotion championing and in terms of the impact of ‘real-life’ stories as health promotion events, was also described. The potential scalability of this role modelling effect at community level was noted, whereby it was perceived that students may pass on
health-related knowledge, practices, and behaviours both to their peers and/or their families as relevant.

“...students will know, like they’ll have classmates or friends or other people in different courses across the campus so it’s that maybe even if like in one way they’re one of the drivers of it (…) it’s kind of peer led again which would be huge” (FG16, SU Officer)

Managers as an Unacknowledged Support Service: Emotional Load of Pastoral Care

Pastoral and conflict resolution duties performed by those with management remits appeared particularly complex within the broader culture of the organisation. Such roles did not appear to be clearly defined, and Senior Management described feeling insufficiently qualified to provide support to their reporting staff members in this regard.

A cultural reliance on Heads of Department (HoDs) was noted, as bi-directional vectors of support for both direct departmental reports (both students and staff), in addition to facilitating the implementation of policies and procedures communicated vertically from Senior Management.

“I think, as an organisation, (we hear) regularly about (how) much the heads of department carry, and (how) valuable the role of head of department is, but we don’t always see something being done to help, maybe lighten our load” (IV02, Senior Academic, HoD)

In addition to a sense of being under-appreciated, HoDs recalled habitual exposure to traumatic and emotionally challenging health-related scenarios; student deaths, staff bereavements, students with chronic and/or terminal illness and student/staff mental health issues.

“I’d a particular issue for example a few years ago where a student passed away tragically, you know had to, you know, had to deal with all that, deal with the class, deal with the students. My God the emotional toll during the Christmas period, that was incredibly tough (…) I don’t think I’ve ever, ever had anyone ask me from above how am I doing” (FG02, Senior Academic HoD)
“…like I’ve two (students) at the moment with (serious illness) and I spoke to one of their parents, not so long ago, and you know, like I’m having a conversation with an adult about (student), who was only 20, who's into (their) second round of (serious illness) and like Jesus like you know this is, this is (sic) something to kind of have on your shoulders you know? And look it’s fine and you get through it, and you know we all have our humanity and our empathy so we’re able to do that, but I was, I was (sic) zonked for the day after it by virtue of just how intense the conversation felt to me, and you know that's, that's not noticed anywhere” (FG01, Senior Academic HoD)

Although unequivocally committed to their pastoral duty of care, HoDs expressed a frustration that the complexity and emotional toll of providing pastoral support as an adjunct to the logistics of managerial duties was not formally acknowledged, or sufficiently supported within the HEI.

“…so we know we do it, but it's not seen, you know? And if we didn’t do it, we wouldn't sleep easy I would say (…) but it's just invisible” (FG1, Senior Academic, HoD)

“You know, as a manager you try to look after your staff, and you try to look after your students, but who looks after you?” (IV02, Senior Academic, HoD)

**Collegiality, Communication, and Supportive Relationships**

Relationships within the organisation appeared to be a fundamental determinant and mediator of both student and staff health and wellbeing. Students described the importance of feeling happy and psychologically safe within the organisation, and how these constructs were in turn mediated by relationships formed within programme-level social groups. In addition, one student described the relationship between an individual’s social group, overall sense of belonging within the HEI, and propensity to engage in health promoting behaviours within the campus environment.

“the reason you're going to want to stay on campus longer is if you're really close to your class group…good relationships with people you're in class with and then with lecturers as well, it gets you to stay on campus longer because you enjoy your environment, you enjoy where you are, and then during your breaks you’re like oh I didn't really feel like sitting down again for another hour or going to (the) library, I might go to the gym or I might go for a walk” (FG11, Current PG Student & UG Alumnus)
It was further acknowledged that relationships, connections, and collegiality amongst and between both students and staff were enabled by small class group sizes that were commonplace within the HEI.

“I suppose we're lucky in (HEI Name) we've got quite small class groups and I think it's actually very effective for making that kind of homely atmosphere, you know everyone knows everyone, it does bring a big sense of community and bringing a sense of community also means that people are kind of looking out for each other.” (FG14 Current PG student & UG Alumnus)

Good citizenship and consideration for others was also encompassed within one staff member’s conceptualisation of a ‘Healthy University’

“I think that idea of conscientiousness is, kind of, should be embedded in the idea of a healthy campus whatever it is, that you do whatever you can for, just for yourself and for others” (FG01, Senior Academic, HoD)

There was a widespread appreciation of the HEI’s culture of collegiality, support, openness and ‘non-hierachal’ structures, and the HEI was frequently referred to as a ‘community’. However, this was not formalised, and some participants contrasted the collegial informal interactions with the formal structures within the HEI.

“I don't want to single out the university, because we have, I think informally, a very, very good culture and of caring for one another…whatever about formal structures, which is another matter entirely” (FG06, Senior Management)

In addition, it appeared that Senior Management relied heavily upon collegial relationships with management colleagues as a first line of support and advice to navigate through complex work-related challenges.

“I suppose we're fortunate, there’s only a few of us at this level as well, so like any we could pick up the phone to anybody at our level, and there will be support there straight away if you need help or anything” (FG08, Senior Management)
One PMSS participant remarked on latent staff social and communication networks that resided outside of the formal organisational hierarchy and structures.

“… I didn't realise how much staff are connected in ways, little networks that are going on through staff, the different things that are available to staff, the way they build up their friendships, and (HEI Name is) its own little world as well, which was something that was new to me…”

(IV04, PMSS Manager)

Similar communication networks appeared to be supported by the account of one student, who referred to the influence of ‘word of mouth’ between peers as a means of disseminating health-related information and messages within the culture of the organisation.

“…you know there's so much signage I feel like you're overwhelmed with signage and stuff like that that you don't actually consume what's there, it's more so by word of mouth.”

(FG14, Current PG Student & UG Alumnus)

Flexible and Caring Ethos

It was notable that for staff in particular, the flexibility and people-centric ethos of the HEI was discussed as a favourable benchmark with respect to roles elsewhere.

“All of our colleagues are very nice to engage with you know I’d have to say that I wouldn't want to work anywhere else, and you know, I suppose, having been (outside the HEI) for a couple of years, I really value, having come back and how a great place (HEI Name) is to work”

(IV06, PMSS)

Several staff also described a culture of flexibility and fluidity within the organisation’s operations and core activities that facilitated (i) pastoral and temporary alleviations of workloads, (ii) student accommodations and individual extenuating circumstances, (iii) placing the needs of the individual at the core of decision making, (iv) flexible working-
time arrangements and, in some instances, (v) flexibility for line managers to authorise staff to take breaks and/or to accommodate as required.

“you know you can almost say to HR look this individual, things aren’t going the way we’d want them to go for them, or whatever, there’s a kind of a positive orientation towards being gentle with people, and that’s one thing I would I would sense is here em... but systematically it’s still kind of down to your Head of Department or your key Line Managers intervening, if you know what I mean?” (FG01, Senior Academic, HoD)

“…like we're generally very open to giving deferrals to students at night, or to kind of extending closing dates for some assignments because you'll get a letter from an employer, you might get a medical cert, sometimes it's something like pregnancy (...) as lecturer and as management I’ve always had, we’ll say at any stage that a staff member has come to me with an issue I’ve always had the freedom to maybe offer an alleviation where necessary” (IV02, Senior Academic HoD)

7.3.3 Theme 3: Experiences Within, and Perceptions of, the Built Environment

A Highly Commended, yet Underused Campus PA Environment

Most students and staff perceived campus facilities and/or elements of the HEI’s built environment as a key enabler of health-related physical activity. The proximity and accessibility of physical activity facilities within the HEI’s main campus was widely commended.

“… I suppose the gym was literally, like, we've access to, like, a number of gyms, like, on the campus probably even more now in the coming years, so, like, no excuses really”
(FG12, Current PG Student & UG Alumnus)

In addition to structured exercise/recreational sport, active transport around the campus itself was proposed as fundamental to reducing sedentary time and behaviours, whereby it was acknowledged that walking between lectures/meetings constituted a key contribution to an individual’s total daily step count.

“...because the campus is so big, I was in there for the first time in ages like yesterday or the day before, and like I had never got so much steps in in ages”
(FG12, Current PG Student & UG Alumnus)
Despite the well-accepted provision, it was also suggested that the HEI’s physical activity facilities were somewhat under-utilised.

“...if you take our student body and their engagement with our sports and recreation facilities is probably quite a small percentage; between 10 to 20% I think” (IV05, Executive Management)

Both students and staff described a perceived lack of time to avail of the facilities due to concurrent academic workloads. In addition, it was also suggested that the extent of provision was not equitable across all campuses of the HEI, particularly within the smaller satellite campuses. Under-utilisation was also acknowledged by Senior Management, who suggested that current practices within the HEI may not enable use of the facilities.

“I think it's interesting that we, we could find ourselves as universities generally in a situation where you know those, there’s facilities available actually perhaps some of our practices don't support what should happen” (IV12, Executive Management)

“Yeah, one of the most attractive things about taking the job in (HEI name) was the facilities (...) I don’t get out to anything now” (FG03, Senior Academic, HoD)

Perceived Lack of Healthy Options within the HEI’s Food Environment

A number of staff participants expressed dissatisfaction with the HEI’s food environment, and the perceived paucity of healthy nutritional options.

“You know it's very difficult to have a healthy option if you wanted to stay on and have something to eat in the canteen, very difficult” (FG2, Senior Academic, HoD)

The normative culture within the HEI’s food environment was discussed, whereby (i) students were posited to gravitate towards cheaper, more convenient ready to eat options, and (ii) there was an overarching sense that it was ‘easier’ within the campus setting to engage in sub-optimal, rather than healthful nutritional choices.
“…it's so easy to grab the bad stuff, whereas you’ve to look for the good stuff (...) like even yesterday I went down to the shop and I was looking for fruit and it was there, gone off, you know what I mean?” (IV14, PMSS)

One student perceived internal inequity between the main campus and satellite campuses, suggesting that satellite campus students lacked the financial resources to prepare and consume nutritious meals from non-subsidised food and beverage outlets.

“I know people definitely don't get their nutrients and they don't… maybe they don't have the time to cook or they don't have the money to, and I think that's actually another thing pushing like food resources and stuff because I know a lot of students don't have the time or the money to feed themselves well. And it’s…especially in our campus not so subsidised the canteen” (FG09, Current UG Student)

Macro-level interventions pertaining to the food environment in other HEIs were cited by another student as an effective strategy to optimise nutrition, and to reduce the consumption of high-calorie products such as sugar sweetened beverages.

“you know, some campuses have implemented, I suppose, the removal of high sugar sweetened beverages on campus I think that is something that would be really effective it might make people think about you know choosing other options like sparkling water and all that, a healthier option, but like if you go into the shop you're actually bombarded with the sale of these (energy drink brand), they take over the whole top shelf…” (FG14, Current PG student & UG Alumnus)

Nowhere Private or Quiet to go

From a mental health and wellbeing perspective, several student and staff participants described their perceptions of the campus as one that was noisy, busy, and lacking in designated quiet, private and/or ‘meditative’ facilities.

“… we've nothing kind of meditative in the College” (FG14, Current PG student & UG Alumnus)
“… I think there's sometimes there's so much noise around here (...) you could walk down through football pitch, but a lot of people probably don't want to do that, but I suppose we did have a contemplation room once upon a time, and it turned out to be the hangover room, I think”

(IV15, PMSS Manager)

This was further supported by contributions from Senior Management who also alluded to a perceived lack of a private space within the built environment. It was proposed that this lack of privacy may further heighten stress and/or distress during sensitive discussions with students/staff.

“…and it might be just as simple as having a cup of coffee, a private place to have a coffee with someone that's upset I mean I've gone to the (F&B outlet) loads of times with somebody, and the tears coming down their eyes, and it's terrible for them then” (FG08, Senior Management)

One PMSS member strongly articulated their view that the HEI had not fulfilled its duty of care to students in acute psychological distress, in terms of provision of a quiet and safe space on campus. This staff member perceived that emotional dysregulation constituted a substantial proportion of students presenting to medical and/or counselling services, and that a purposive space for students to self-regulate could, in turn, serve to redirect some of the ‘worried well’ away from acute support services.

“…when I asked like (what) do you do when you feel, you know a panic attack or anxiety attack coming on (...) some of them are like ‘yeah I sit in the toilet on the ground of the accessible toilets’, I mean that is not okay, or they go out to their car if they’re lucky enough to have one and sit there for a while; that's not okay either like (...) (HEI Name) what we’ve over 18,000 students like we have no designated space for them, I think that's an absolute disgrace (...). Because what we’re telling them is that we don't really care if you are panicked, or if you have anxiety…”

(IV07, PMSS)
7.3.4 Theme 4: Sectoral and Organisational Determinants of Health and Wellbeing

Change Within the Higher Education Sector

There was an overarching sense amongst staff participants that the higher education sector had changed, and become more pressurised and bureaucratic. In terms of social connection, staff recalled having more time to engage in informal social practices in the past, in stark contrast to the increasingly pressurised contemporary higher education environment that was described within their lived experiences. In this regard, increased administrative burdens and workloads were posited to have eroded into break times throughout the working day.

“for all of the advances we've made, we all seem to be more busy than we ever were (...) the older members of our department, who are now retired, always went for coffee at 1030 or 1045(...) if I went to the staff room pre-Covid I might be able to find one person in my department actually stopped having lunch (...) I think the frustrating part is that most people think the system is just inefficient... and just constantly asking, for heads of department, more and more paperwork” (FG03, Senior Academic, HoD)

Those in management recalled a progressive reduction in work-life balance compared to earlier stages of their careers. There was a perception of increased pressure and expectation placed upon all within the higher education sector, and this in turn was attributed to under-resourcing, funding constraints, and greater demands placed upon staff by the contemporary student body.

“I think too many of us are living life at 400 hundred miles an hour, simply to keep things going because there aren't enough people in the system, and that means excessive working hours, it means excessive stress” (FG06, Senior Management)

“I think actually students demand more, I think their parents and guardians are demanding more, so I think we're in a society that has become more demanding and, as a result of that, I think there is more stress on people, because people are getting it (from) a senior manager, or maybe staff below maybe getting from students who want more” (IV11, PMSS Senior Management)
Further to this, participants alluded to a loss of inter-personal collegial connections, during which informal, yet effective, methods of addressing issues and/or discussing concerns regarding students also appeared to have been replaced by bureaucratic and ‘impersonal’ operating procedures. There was a perception amongst some that the values of the practices of the past were not sufficiently respected by HEI management.

“… I know we have to move on (and) change is good, but the old way, we did things very well and there was that much support I felt; it's very impersonal now more than before”
(FG8 Senior Management)

“…change is part of life, but I would suggest that we’re all very good at dealing with change, we wouldn’t be in the roles that we’re in if we weren’t (…) but the issue is when the change is done in a way …which doesn't respect necessarily what was there before” (FG06 Senior Management)

Too Busy to be Healthy? Heavy Workloads and Lack of Time

Heavy workloads, overwhelm, little work-life balance, and having an overarching lack of time were evident barriers to health and wellbeing embedded within the operational structures of the HEI. Although the nature of the specific work packages and/or stressors varied depending on the sub-cohort, the shared collective opinion of excessive, stress-inducing and largely unsustainable workloads were ubiquitous. Heavy programmatic (students) and occupational (staff) workloads were perceived as normative within the culture of the HEI. Amongst staff, it was suggested that the magnitude of an individual’s workload and their relative sense of ‘busyness’ was perceived as directly proportional to the value of their contribution to the HEI.

“I do get a sense from talking to people that (…) you're not enough if you're not completely off the walls” (IV04, PMSS Manager)

“I had a lecturer telling me… this was in semester two of last year, that they had no break, they had no weekend off, you know, for something like 10 weeks in a row, and to be fair ok this is a very diligent lecturer (…) that's a responsibility on ourselves, but on the Institute as well you know, that we shouldn't have a workforce like that, you know?” (FG5, Senior Academic HoD)
The importance of maintaining a healthy work-life balance for staff was also discussed, with some perceiving that such a balance was not being attained, particularly within the cyclical academic year. Staff cited heavy workloads as a barrier to engaging in leisure time physical activity, and also as a reason for suboptimal nutrition ‘on the go’, as a deterrent to good sleep, and as a pervasive stressor rendering it difficult to ‘switch off’.

“Well, I certainly think that since I’ve taken over as Head of Department that I’ve gotten an awful lot less exercise actually (…) the job I suppose; I’ll just do this, and then I’ll do it, I’ll just do this, I’ll just do this, there's never an end to it though; certainly being Head of Department comes with its own unfitness warning really” (FG04, Senior Academic HoD)

“I would say mentally and physically you're never switched off, you're just putting a stop on things; you know that the next time you turn on the PC that there’ll be, you know, 30 emails waiting for you if you step out for a couple of hours” (FG05, Senior Academic, HoD)

“…the job is relentless, and it can be relentless, and it can take over your life” (FG08 Senior Management)

The substantial part-time programmatic offerings of the HEI appeared to further extend the duration and longevity of the habitual working ‘day’ for some staff, in addition to increasing the volume of associated administrative workloads.

“I tended to work late on campus a lot, and partly it was because we had evening students coming in. And I felt staff were looking for me at nine in the morning and staff were still looking for me at nine in the evening…” (IV02, Senior Academic HoD)

Overall, there was a perception amongst both students and staff of simply not having the time to commit to, or to engage with health-promoting events, activities or behaviours. This was reported amongst all strata of the HEI. In addition, it was consistently stated that health and wellbeing needed to be embedded within the habitual day, and not perceived as an ‘add-on’ or extraneous activity.

“…it was my first semester final year and everything just seemed to come all at once, I think (I had) 13 or 14 assignments due in (like I think it was actually less than) 8 or 9 days But I was, I
was lucky that I had started early, but other people were just literally doing things right up until the deadline every day” (FG18, SU Officer and Current UG student)

“… I mean I’d love to do the Pilates classes at lunchtime and stuff, but I’d be very hard pushed to find the time” (FG03, Senior Academic, HoD)

“…there's a kind of fundamental systematic issue around …I suppose the capacity that that we're working at, and the structures that are in place to support that, and that means that even if you did, you know, implement initiatives like that; that people just wouldn't have the time to do it” (FG50, Senior Academic HoD)

Demands of Teaching and Learning

The timetabling, structure and workloads associated with fulfilling the demands of certain academic programmes was discussed as a contributing factor towards reduced morale, sub-optimal health metrics and poor sleep at certain stages of the academic year.

“Like mentally I really enjoy (discipline), and it makes me happy, but at the same time, like the amount of work and I guess the pressure that's put on (discipline) students to be perfect and the pressure we put on ourselves; that definitely hindered my health, and like even sleep and stuff, I just don't have time for it” (FG09 Current UG student)

“…so you will see like towards Christmas and towards June among the staff cohort there is a kind of a sense that, there's always a sense that people are really starting to run on empty, and goodwill is starting to run out” (IV13, Executive Management)

The periodic intensity of semesterisation was described as a substantial and distinct stressor by both students and staff. Students described unbalanced academic workloads within the constraints of the semesterised model, reporting sub-optimal cohesion at programme level in terms of assessment load and scheduling.

“… people have been coming to me saying that there's just too much on like with all the practical stuff, and the academic stuff, and even people who generally don't tend to get stressed are getting stressed and they just find there’s too much work, or they don't have time for it and they're not getting sleep” (FG09, Current UG student)

“…even for my first semester of final year I don't think like… I remember looking at my list one time and I had literally 14 things within the space of I’d say 10 days, between exams and submissions so like you don't even have time to to get out and to help with your physical health or
even have time to kind of check in on yourself to make sure you're okay like, it's just, you can (get into) real tunnel vision…” (FG15, SU Officer)

For staff, time constraints within the semesterised model was also suggested to lead to presenteeism in the form of staff attending work when unwell in order to fulfil modular and assessment obligations.

“we do get good breaks, but when you’re on you’re on, you know so it's a treadmill during the academic year (…) we would have had staff who would have come in to work who would have been feeling unwell. But they’d say ‘it's week six and I’ve got an assessment, today, so I had to be here, I couldn't put it off, don’t know when I'm going to get it done’ (…) there’s no give in semesterisation” (IV02, Senior Academic, HoD)

Ostensibly, PMSS operated from traditional calendar year contracts. However, this sub-cohort also reported incremental increases in workload to meet ‘in-semester’ student demands for either support service provision and/or means assessment for same. Furthermore, one Senior Manager expressed discontent with the misperception that PMSS experienced comparable alleviations in workloads during the summer months.

“And nothing grates me like, (…) some of my academic colleagues will come back on the first of September and say ‘God, you must have had a great summer, it was so quiet’. And I would say to people, how do you think two and a half thousand students have arrived here?  We recruited over the summer, we worked with them over the summer, we ran various events” (IV11, PMSS Senior Management)

Some staff expressed concerns regarding the immediacy of semesterisation, whereby first year students in particular were expected to assimilate modular content and complete assessments from the very outset, reducing opportunities to engage in extracurricular elements of the student experience.

“"I was there at the beginning of the modularisation and semesterisation, and a lot of the activities got…got…how would you say…got badly interrupted anyway for the first few years, because I
mean there were people seen studying in the canteen in October which was unheard of you know?”
(IV09, Executive Management)

Secondly, it was suggested that many students disengaged from varsity sporting activities during the second semester of the academic year. It was postulated that this drop off in participation was due to students’ exposure to the extent of expectant academic demands during semester one, and consciously choosing to disengage from extracurricular activity during semester two.

“I do think semesterisation has had a huge impact on, I suppose, sports and sports clubs (...) I think that's what it comes down to, to be honest (...) just after semester one exams, they’re like ‘I can’t do that again in Semester two’” (IV14, PMSS)

The academic expectations placed upon students were further substantiated within the qualitative contributions of several Senior Management and PMSS. In this regard, the consuming nature of certain academic programmes was acknowledged; high contact hours, and a perception that students were ‘over-timetabled’ with demanding content to meet external accreditation requirements, leaving little remaining time to engage in meaningful extra-curricular activity.

“I think, time is our big problem and part of that is how we teach; our students have very high contact hours. The complexities then of timetabling, so I think it’s quite difficult now for group activity (...) whereas if you go back to university there was the old Wednesday afternoon (that) was kind of set aside, and there was a huge amount of activity that happened at that time we’ve lost a lot of that” (IV05, Executive Management)

“... students do need time to do their exercise, you know (it) really shouldn't be an 80-hour week for them” (IV13, Executive Management)

Specifically, the lack of a ‘protected’ lunch time since the implementation of semesterisation was proposed as a barrier to engagement in recreational PA provision, and a greater effort to ‘protect’ the lunch hour was perceived as an effective macro-level
solution in order to embed health and wellbeing within the habitual day.

“…having an expectation of say for example, having one to two where nobody is in their office, that (would be) a really good start wouldn’t it, because you could do a lot with that hour”

(FG04, Senior Academic, HoD)

“…wouldn’t it be great if you said right (…), we're going to timetable in a healthy hour, you know. Let the class connect and go for a walk” (IV08, Senior Academic HoD)

Internal Barriers and Bureaucratic Frustrations

Students and staff described certain frustrations with the HEI’s structures that they perceived constituted direct organisational barriers to health and wellbeing. Bureaucratic barriers cited included insurance-related issues regarding making certain facilities such as the HEI’s sports hall available for unstructured activity, internal barriers that prevented one student from voluntarily organising a healthy cooking demonstration under the remit of an extra-curricular society, and greater administrative obligations precluding ability to attend or participate in recreational physical activity provision and/or to take sufficient rest breaks (staff).

For PMSS members, a previous public-sector working time agreement implemented as part of national fiscal policy was described by a Senior PMSS colleague as a pragmatic barrier to engaging in health-promoting behaviours such as physical activity during the habitual working day. It was outlined that this agreement resulted in many PMSS taking a reduced lunch break of 30 minutes to offset the increase to weekly working hours.

“I remember being really, really cross at the time, because you know, there was quite a number of our team who used to kind of use that hour whether it was to go to the gym or to get fresh air or, you know, just to get out and (it) allowed you to do that, a half an hour of exercise (…). You know that certainly was kind of... I was cross about that because I thought that impacts, that certainly impacts on our health and wellbeing directly, the fact that we had this, you know, additional workload on our desks now” (IV01 PMSS Manager).
7.4 Discussion and Triangulated Model of Determinants of Health and Wellbeing within Case HEI

This study aimed to qualitatively elicit the lived experiences of students and staff within the culture and context of the case HEI setting, and to triangulate these narratives with the relevant quantitative data (Chapters 4-6) to gain a more intricate understanding of the determinants of health and wellbeing of the HEI’s population. Students and staff are the fundamental stakeholders in, and beneficiaries of, any campus HP initiative, and the current study constituted an in-depth consultation with a cross university sample of purposively identified stakeholders from a multi-campus case HEI in Ireland.

Considering these current data from a solely qualitative perspective, a sequential inductive-deductive analytical approach was used to identify themes, which were subsequently stratified into ascending ecological levels of influence at which determinants of health and wellbeing (both barriers and/or facilitators) were postulated to reside. Merging both inductive (data-directed) and deductive (theoretically guided) analyses has been proposed as a rigorous method of epistemologically contextualising thematic content with respect to the overarching guiding theory and/or paradigm of the research (Fereday & Muir-Cochrane, 2006). Structuring empirical data into a socio-ecological matrix represented a suitable approach within the context of the current thesis, which aims to inform a settings-based campus health promotion (‘Healthy University’ [HU]) initiative.

In terms of qualitative themes identified, at an individual level (Theme 1 ‘Personal paradigms and perspectives’), personal definitions of health and wellbeing provided an insight into participants’ holistic, positivist and multi-domain perceptions of health, in addition to the context underpinning their habitual lifestyle behaviours within the case
HEI. In terms of inter-personal relationships (Theme 2 ‘People and relationships within the HEI’), it was evident that relationships, collegial support, and the relative flexibility embedded within the culture of the HEI were robust and ubiquitous facilitators of health and social wellbeing. Many staff in the case HEI assumed quasi-vocational roles, and assisted either students or staff to navigate personal and health-related difficulties. It was also apparent that behavioural role modelling at each hierarchal level of the case HEI served as a potent enabler of health-promoting behaviour and practices. Notably, those in management roles (particularly Heads of Department) were habitually exposed to complex and emotionally challenging health-related scenarios during interactions with both students and staff, without any formalised support, supervision or acknowledgement.

At an environmental level (Theme 3 ‘Experiences and perceptions of the built environment’), many participants did not feel enabled to habitually engage with the campus physical activity facilities, and there was a perception that healthy dietary choices were difficult within the context of the campus’ food environment. Crucially, there was also a perception that the busy campus lacked privacy and was not conducive to facilitating emotional and/or self-regulation to alleviate acute anxiety or distress. Finally, at an organisational and sectoral level (Theme 4 ‘Organisational and sectoral determinants), a multitude of barriers to health were discussed, such as stress, overwhelming workloads, semesterisation challenges, increased bureaucracy, and administrative demands. Collectively, these barriers were posited to have eroded the agency and self-efficacy of the HEI’s student and staff population to engage in social interactions and recreational physical activity.

To gain a greater understanding of the complexity of the determinants of health and wellbeing of both students and staff within the case HEI, the current qualitative data
corpus was also examined in the context of the predominantly quantitative metrics identified within previous Chapters of this thesis (Studies One to Three, Chapters 4-6). In a research context, ‘triangulation’ refers to the combination of multiple methods to conduct an in-depth investigation into a specific phenomenon (Heale & Forbes, 2013). The determinants of health and wellbeing that were elicited by this triangulation process have been illustrated in Figure 7.1 below, and form the basis of the remainder of the current discussion and recommendations. As an overarching ‘practical model’ to guide practitioners and stakeholders within HEIs and similar organisational settings, Figure 7.1 schematically illustrates the complex inter-relationships between pertinent domains and determinants of health and wellbeing that reside within the intervention scope of the case HEI.
Figure 7.1 Multi-level determinants of health and wellbeing within the case HEI; a triangulated pragmatic model.
As illustrated, socio-demographic factors, in addition to further HEI-specific demographics (such as campus placement and/or academic discipline), have been posited to reciprocally mediate the health and wellbeing of the case HEI’s campus population as underlying covariates. Individuals, together with their collective contexts, are subsequently exposed to the HEI setting and pervasive socio-cultural determinants of health and wellbeing, including (i) stress within the highly pressurised, semesterised, higher education environment, (ii) a culture of high emotional investment in the HEI, (iii) informal social relationships and peer-group cultures, and (iv) behavioural role modelling. In addition, cohort-specific contexts and determinants have been depicted, which may contribute to an overarching pattern of risk behaviours amongst students (Bickerdike et al., 2019), and a clustering of behaviours amongst staff (Bickerdike et al., 2022). In the current qualitative data, additional insight into these cohort-specific perspectives emerged, such as the solitary nature of many academic roles, in addition to the concerns harboured by several staff regarding getting older. Interestingly, in contrast with quantitative findings reported in Study One (Bickerdike et al., 2019), risk-related behaviours such as alcohol consumption, sexual promiscuity and/or drug use were not commonly described by student participants in the current qualitative study. This could potentially indicate that (i) the student participants in the current qualitative phase did not engage in such practices, (ii) participants consciously avoided discussion and/or disclosure given that focus groups were recorded, and/or (iii) that there has been an overarching normalisation of risk-taking behaviours amongst contemporary HEI students, as evidenced by the concerning social normalisation of illicit drug use reported amongst a cohort of 11,592 students across 21 HEIs in Ireland (Byrne et al., 2022).
Several domains (mental health, PA, nutrition/BMI and sleep) appeared to be of ubiquitous relevance to all strata of the campus population. These domains were, in turn, influenced by the HEI environment, in addition to reciprocal ‘between-domain’ synergies, as depicted within Figure 7.1 using bidirectional arrows. Finally, the model indicates four ecological ‘intervention levels’ within the remit of the HEI, at which campus health promotion activities and interventions could be mapped, designed, implemented, and ultimately evaluated within the context of an overarching settings-based/HU health promotion strategy. The remainder of the current discussion contextualises Figure 7.1 in greater detail, and serves to outline the triangulation process which substantiated its derivation and design. Section 7.4.1 below commences this discourse with an exploration of participants’ perspectives of ‘health’ (depicted at the bottom of Figure 7.1 as a foundational concept), and the remaining components of the model are subsequently examined in sections 7.4.2 to 7.4.4.

7.4.1 Health as a Valuable, yet Intangible Asset

Qualitative data confirmed that health was regarded as a highly valued construct, intrinsically linked to happiness, sense of purpose, belonging and quality of life. Although the current sample constituted a diverse cohort, many of whom did not have a direct health-related remit and/or expertise, it was notable that perceptions were consistent with the holistic and positivist perspective outlined within the seminal World Health Organisation (WHO) definition of health as, “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948, p. 1).
Interestingly, many participants perceived health as a pre-requisite to optimising activities of daily living (ADLs) and was perceived by one Senior Academic as an overarching positivist enabler of “a good life”, (IV16, Senior Academic HoD). One Executive Management participant noted the intricate link between staff engagement, productivity, and wellbeing. The largely ubiquitous appreciation of the importance of health, and of attaining a sense of ‘balance’ across the domains of wellbeing, was indicative of a collectively perceived value in the ethos of the ‘Healthy University’ (HU) approach amongst campus stakeholders in the case HEI. It also provided greater evidence that organisational and/or socio-demographic barriers, rather than ideological objections, pose the greatest challenge to engagement with either research activity and/or health promotion activities under the remit of a HU initiative, as initially hypothesised in Chapter 6.

Moving forward, however, the diversity of participants’ definitions of holistic health constitutes a pragmatic challenge in terms of explicitly defining the (i) placement, (ii) scope, (iii) governance, and (iv) evaluation metrics of a settings-based HP initiative within the current ‘live’ ecosystem of the multi-campus case HEI. Similar challenges have been reported in a systematic review of literature pertaining to the global implementation of the settings approach within HEIs (HU and/or ‘Healthy Campus’ approach), whereby a dearth of tangible implementation studies relative to an abundance of theoretical discussion was noted (Suárez-Reyes & Van den Broucke, 2016). This dearth further complicates the implementation, evaluation and explicit alignment of HU initiatives with core HEI performance indicators (Dooris et al., 2014), and also negates the HU resource case within a performance-driven contemporary higher education environment.
As previously outlined in Chapter 2, HEIs have been globally (Okanagan Charter for Health Promoting Universities and Colleges), and nationally (Irish Healthy Campus Framework) called to create cultures of positive health and wellbeing. Given the hugely variable levels of salience placed upon various domains of health and/or wellbeing by the case HEI’s population, a formal structured mapping exercise, management-endorsed consultation, and visible alignment of the campus HP initiative with all health, wellbeing and social engagement stakeholders across the HEI is therefore warranted. This will cohesively ensure (i) that an adequate breadth of health and wellbeing domains are encompassed within the initiative’s strategy and marketing, extending to, and beyond, traditional realms such as structured exercise and/or physiological health, (ii) visible cohesion and consistent marketing of ‘on the ground’ activity to ensure alignment with a streamlined HU strategy, and (iii) that current activities can be complemented, where required, by macro-level ecological policies and/or built-environment interventions to maximise the scalability, cost-effectiveness, and strategic placement of the HU initiative within the multi-campus case HEI. Views and formal endorsement of Executive Management stakeholders will be required to guide the resource casing of same, in addition to the strategic selection of evaluation metrics, linking the theoretical HU to the most pertinent KPIs of the organisation.

7.4.2 Stress, Overwhelm, and Sectoral Changes

Physiologically, ‘stress’ has been defined as exposure to, and/or poor recovery from, erratic and/or uncontrollable environmental stimuli, the demands of which are perceived to exceed an individual’s capacity to cope (Koolhaas et al., 2011). In the current study, stress, substantial workloads, pressure, and palpable changes within the culture of the
higher education sector were consistently described as pervasive barriers to health and wellbeing. The time demands of either meeting the requirements of academic programmes (students), and/or fulfilling occupational duties (staff), were described by some participants as all-consuming; “the job is relentless, and it can be relentless, and it can take over your life”, (FG08, Senior Management).

Increased pressure and expectation relative to the less bureaucratic and more relaxed practices of the past were also highlighted by several staff participants. This sense of pressure permeated throughout the lived experiences of both ‘Academic Staff’ and PMSS members. In addition, one PMSS Manager posited that contemporary HEI students also trended towards placing greater demands and expectations on the structures, and staff, of the case HEI. Although merely speculative, this could be symptomatic of an increasingly competitive contemporary higher education system (Musselin, 2018), within which students perceive either a greater expectation of, and/or pressure to achieve, academic success.

Several staff also alluded to a perceived social norm within the HEI to appear ‘busy’ and/or ‘stressed’; “… it is now almost unacceptable to be walking out of work saying I’m full of energy. You have to be coming out of work or college saying I’m exhausted, and you have to be stressed”, (FG03, Senior Academic, HoD). In addition, students’ predominant stressors appeared intrinsically interwoven with the demands of their academic pursuits within the HEI. In this regard, students recalled occasions of acute stress, attributable to the workload associated with completing modular assessments during the final stages of their semesterised programmes. Worryingly, one student (a recent Alumnus of the HEI) conceptualised their time as an undergraduate within the case
HEI as, “probably the four most stressful years of my life”, (FG15, SU Officer). These qualitative accounts further substantiated the high levels of academic stress previously reported in Study One (Chapter 4) of this thesis (Bickerdike et al., 2019), whereby the most prevalent psychological stressors experienced by students were ‘exams’ (34.6% ‘highly stressed’), ‘college workload’ (28.3%) and ‘studies in general’ (24.6%). It is also possible that the HEI-wide culture of stress and pressure described within the current qualitative data may have contributed to the low energy/vitality quantitatively exhibited by substantial proportions of both students (83.7%) and staff (83.0%), and discussed previously in Study Three (Chapter 6).

It is evident that a paradigm shift towards ‘systems thinking’ (Best, 2011), encompassing environmental interventions at a macro level to alleviate the somewhat normalised pressures associated with the higher education experience, will be required to address the extant culture of stress within the case HEI. Such interventions should aim to review and advocate for the embedding of health-enhancing practices within fundamental operations of the HEI (Okanagan Charter, 2015). The current data indicate that interventions to alleviate the intensity of core processes, such as programme design, delivery, assessment, and its associated administrative functions, are urgently warranted. The impact of such interventions could be enhanced by cohesive efforts through the medium of the Irish Healthy Campus Network, to facilitate sectoral level engagement and consultation with cross-government departments, programme accrediting bodies, and the Higher Education Authority.

Future interventions should also be informed by designated longitudinal mixed-methods research to elicit the chronological trends in perceived stress of both students and staff.
across an academic year, and to establish the causal direction of the relationship between stress, health-related behaviours, psychological health indices, physiological health, and core organisational metrics such as student engagement and staff productivity/absenteeism. Future longitudinal analyses should also be purposively stratified to investigate the extent to which socio-demographic and psychometric (such as self-efficacy) variables may mediate (i) relative exposure to, and (ii) mechanisms adopted to cope with, psychological stress within the HEI. In this regard, disproportionate stress exposure has been previously proposed as a mediator of gender and socio-economic health inequities (Thoits, 2010). In Study One (Chapter 4) and Study Two (Chapter 5) of this thesis, several notable gender differences in quantitative psychological indices were observed, whereby female students exhibited significantly lower (less favourable) scores on validated measures of psychological distress (negative mental health) and energy/vitality (positive mental health) (Bickerdike et al., 2019). Interestingly, female staff also exhibited significantly (p<0.05) lower energy/vitality, in addition to a significantly poorer perception of work-life balance, and lower perceived self-efficacy to solve personal problems (Bickerdike et al., 2022). Similarly, campus-specific stressors should be further explored, given the significantly (p<0.05) more favourable health perceptions exhibited by staff of the HEI’s ‘primary central campus’, relative to the ‘satellite campuses’ outlined in Study Three (Chapter 6).

Overall, the current qualitative data were suggestive of an association between stress and health-related behaviours amongst both students and staff. This finding is consistent with previous quantitative data reported in Study Two (Chapter 5; Bickerdike et al., 2022), whereby staff who exhibited the healthiest clustered lifestyle patterns also reported significantly lower (more favourable) scores on the short form (4-items) of Cohen’s
Perceived Stress Scale (Cohen et al., 1983). Whilst the relationship between perceived stress and health-related behaviour is likely to be reciprocal, it appears that stress constitutes a latent environmental determinant of health within the case HEI. Expanding further on a preliminary hypothesis first proposed in Study Three (Chapter 6), ‘mutual exposure’ to an environment and culture of stress may also have contributed to the markedly similar proportions of both students and staff who reported sub-optimal wellbeing (83.7% students and 83.0% staff), insufficient sleep (79.3% and 82.2%), poor nutrition (74.9% and 62.1% < 5 daily portions of fruit and vegetables), excessive sitting time (65.7% and 60.8%), and risk-related body habitus (41.6% and 49.4%), respectively.

7.4.3 People and Relationships

Although beyond the scope of the initial quantitative Chapters of this thesis, the current qualitative study served to identify the importance of enabling, and purposively leveraging, the power of (i) positive inter-personal relationships, (ii) habitual social-interactions, (iii) hierarchal behavioural role-modelling, and (iii) collegiality as informal, yet invaluable, social facilitators of positive health and wellbeing across all strata of the case HEI. Notwithstanding the variable magnitude of effect, a previous comprehensive literature review noted the crucial role of social support as a coping mechanism to alleviate occupational stress (Haly, 2009). Informal support-seeking from friends was also described as a habitual behaviour undertaken to ameliorate psychological distress amongst a cohort of nursing and teacher-education students in previous Irish mixed methods research (Deasy et al., 2014).
As notable inter-related ecological determinants of health identified in the current study, relationships formed within programmatic class groups were perceived to further influence students’ likelihood to engage with the HEI’s built environment; “the reason you’re going to want to stay on campus longer is if you’re really close to your class group...good relationships with people you're in class with and then with lecturers as well”, (FG11, Current PG student and UG Alumnus). In a broader sectoral context, social ‘belonging’ has been well-explored as a construct that enhances student engagement (Thomas, 2012). Moreover, research involving a cohort of healthy adults also reported both physiological (reduction in heart rate) and psychological (increased esteem, more positive mood) responses amongst participants following exposure to purposively designed activities to replicate social inclusion (Begen & Turner-Cobb, 2015). The current qualitative data further supported the rationale for resourcing and implementing adjunctive health promotion and informal social initiatives at programme level, as a cross-cutting, synergistic approach to concurrently enhance both student engagement and wellbeing.

Of further note, a palpable vocational and emotional investment within the HEI appeared to be embedded within the psyche and lived experiences of many staff. Both Academic and PMSS members alluded to an internalised duty of care towards students, and/or to regularly perform adjunctive pastoral and supportive roles. There appeared to be a complex latent social dynamic within the HEI, whereby the vocational attitudes of staff contributed to the highly commended ethos of collegiality, flexibility, and support. Concurrently, however, this culture of vocation and investment in the HEI may also have contributed to less desirable outcomes, such as staff acting beyond their scope and remit to intervene when students were in acute mental distress. Similarly, it was suggested that
the HEI may have somewhat capitalised upon the diligence and emotional investment of some staff sub-cohorts, particularly Heads of Department (HoDs) and other members of management, who habitually performed pastoral duties in the absence of training or formal support. It is possible that the occupational stress exhibited by staff in earlier Chapters of this thesis (Bickerdike et al., 2022) may have been mediated by their high emotional investment in the HEI, and this warrants further investigation.

Finally, the current data identified behavioural role modelling as a potent, cross-HEI determinant of health. Both explicit (conscious practices of HoDs and other members of management), and latent (culture created by Executive Management and within academic departments) role modelling appeared to manifest vertically (management-to-staff-to-students) and laterally (student-to-student within the culture of a department or programme). Formal staff-student mentoring was previously proposed in Study Three (Chapter 6), in the context of promoting mental wellbeing and resilience amongst students. However, the current qualitative data suggested that macro-level policies to create ‘protected time’, and hence enable all strata of the HEI to self-regulate and/or visibly engage in a health-promoting behaviour (physical activity for example) within the HEI’s built environment, would constitute a more impactful, and cost effective vertical and lateral role-modelling intervention.

7.4.4 Pertinent Health-Related Domains

Consistent with previous Chapters of this thesis, and as illustrated within Figure 7.1, both students and staff referenced a series of common health and lifestyle domains, such as mental health, physical activity, nutritional behaviours, and sleep. Further, the built
environment of the HEI was perceived as a potential ecological determinant of (i) mental health, (ii) physical activity, and (iii) habitual dietary choices. Nevertheless, despite widespread acknowledgement of the potential to practice health promoting behaviours such as physical activity within the context of the HEI’s built environment, the population’s actual agency in this regard remained heavily influenced by overarching cultural determinants such as stress, social norms, heavy workloads, and/or an absolute scarcity of time (as discussed above, and illustrated in Figure 7.1).

Lived experiences of students and staff in the current study also indicated intricate lateral relationships between a plethora of lifestyle domains, such as nutritional intake and mood, in addition to a reciprocal relationship between mental health and sleep. These data affirm the paradigm that health-behaviours should not be considered in isolation (Dodd et al., 2010), and further substantiate the ‘real-world’ ecological validity of previous quantitative approaches in this thesis (see Chapters 4 and 5), such as the multiple linear regression model used to identify predictors of students’ positive mental health (Bickerdike et al., 2019), and the cluster analytical procedure to investigate the co-occurrence of health-related behaviours amongst staff (Bickerdike et al., 2022).

**Mental Health and Wellbeing**

In Study One (Chapter 4), over one in three students (35.2%) rated their mental health as either ‘very poor’ (2.4%), ‘poor’ (10.2%), or ‘neither poor nor good’; 22.6% (Bickerdike et al., 2019). The current qualitative data appeared to re-enforce the prominence of mental health issues amongst the case HEI’s student population. It was both stark and striking to note the observation of one PMSSS member, who perceived an increase in the volume and
complexity of students presenting with severe mental ill-health, particularly depression, anxiety and suicidal ideation.

“I can't stress enough how much we work with suicidal ideation (…) I think, given the current climate, we have a lot of students coming to us and the need, the needs (sic) and their concerns are greater than the years that have gone past” (IV04, PMSS Manager)

This is consistent with international literature, whereby anxiety, depression, suicidal ideation, and stress have been extensively reported amongst HEI student cohorts (Bayram & Bilgel, 2008; Eisenberg et al., 2007; Grasdalsmoen et al., 2020; Mortier et al., 2018; Satinsky et al., 2021). From an environmental perspective, the lack of private and/or designated quiet spaces within the multi-campus setting was strongly criticised by another PMSS member, who perceived this as an unequivocal lapse in the HEI’s duty of care to vulnerable students. Alarmingly, this staff member described instances of students with panic disorders and/or anxiety retreating to campus bathrooms and/or their cars (if applicable) when in acute distress.

As a further determinant of mental health and wellbeing, the erosion of students’ leisure time by programmatic demands appeared somewhat normative and accepted within certain academic disciplines. One member of Senior Management stated an explicit opinion that students were “over-timetabled” (IV16, Senior Academic, HoD). This is consistent with quantitative data reported in both Study One (Chapter 4) and Study Two (Chapter 5), whereby a perceived lack of time was the most prevalent perceived barrier to becoming more active reported by both students (51.6%) and staff; 37.5% (Bickerdike et al., 2019; 2022). It was worrying to note students’ attrition from varsity sport and/or extra-curricular activity, which was described by one PMSS participant in the current study as the opportunity cost of semesterisation. This was particularly concerning in the context of students’ wellbeing, given that previous Irish research (n=8,122 HEI students)
demonstrated that students who attained sufficient physical activity also exhibited significantly more favourable mental health (Murphy et al., 2018).

Amongst staff, mental health appeared to be intrinsically linked with perceptions of work-life balance, occupational stress, and the concept of wellbeing rather than mental ill health. This was consistent with earlier phases of this research (Study Two, Chapter 5 and Study Three, Chapter 6), whereby a greater proportion of students (40.2% vs. 15.4% of staff) were deemed to exhibit ‘negative’ mental health (as measured by the Mental Health Index–5), but similar proportions of students and staff (83.7% vs. 83.0%) exhibited sub-optimal wellbeing (low energy/vitality), on the 4-item Energy & Vitality Index (Bickerdike et al., 2022).

The current qualitative data also indicated that a cultural expectation of vocation, collegiality, support, and flexibility within the HEI may have normalised reductions in wellbeing and/or increases in occupational stress perceived by staff at stages of the academic year. Interestingly, in Study Two (Chapter 5), relatively high proportions of staff quantitatively reported having a ‘very good’ or ‘good’ quality of life (92.8%), mental health (85.1%), and adequate work-life balance; 79.4% (Bickerdike et al., 2022). Although this was somewhat discordant with some descriptions of stress in the corresponding qualitative dataset, it is possible that affinity for the HEI may have skewed the insight of some staff participants in previous waves of quantitative data collection, and/or negated the ability of some staff to perceive their socially normalised experiences within the HEI as being detrimental to their mental health. As previously proposed in Study Three (Chapter 6), it is also possible that greater stigma amongst the staff cohort may have precluded disclosure of mental ill health. The current qualitative data appeared
to support this hypothesis, whereby one PMSS Manager suggested that it was less common within the culture of the HEI to discuss and disclose information regarding mental health-related absenteeism, as opposed to a physical illness or disease.

**Physical Activity (PA) and Sedentary Behaviours**

In the current qualitative study, participants largely acknowledged and commended the environmental PA provision, particularly within the HEI’s main campus. In a broader context, it is well established that HEIs are uniquely amenable settings for the implementation of interventions to enable recreational PA (Plotnikoff, Collins, et al., 2015), in addition to the provision of opportunities for students to participate in both competitive and recreational varsity sports (Murphy et al., 2015). In Study Three (Chapter 6), the cumulative area of designated PA facilities within the case HEI’s built environment was reported to exceed 55,000m². Concurrently however, substantial proportions of the campus population (28.7% of students, 23.5% of staff) were deemed not to have achieved the minimum-recommended volume of PA.

In the current qualitative data, both students and staff appeared to place an inherent value on regular exercise and/or PA, as evidenced by frequent references to these domains within conceptualisations of ‘health’ or a ‘healthy lifestyle’. Notably, several participants perceived leisure time PA as a purposive practice to enhance mood and mental health. Paradoxically, however, an inherently sedentary culture was evident from participants’ collective lived experiences within the HEI setting, whereby PA did not appear to be universally embedded within daily academic and/or occupational routines. This was particularly apparent amongst Senior Management, including HoDs, some of whom explicitly described declines in their habitual PA as a direct result of their roles;
“...certainly being Head of Department comes with its own unfitness warning really”

(FG04, Senior Academic, HoD).

However, as a consistent thematic finding, both students and staff in the current study appeared to perceive a lack of time and/or ‘permission’ to embed regular PA within their habitual day. Furthermore, the HEI’s predominantly sedentary culture, as previously discussed in Study Three (Chapter 6), in the context of the excessive sitting time reported by both students and staff, was further evidenced within the qualitative account of one Senior Management staff member whose request to procure a standing desk was declined and deemed unnecessary expenditure. As a further bureaucratic determinant, one PMSS member cited insurance reasons as a barrier to facilitating students to engage in self-directed PA within a sizeable (706 m²) campus sports hall facility.

It was first proposed in Study Three (Chapter 6) that the case HEI’s culture trended towards perceiving PA/exercise as an extraneous leisure-time activity, as evidenced by the substantial proportions of student and staff ‘gym-goers’ (52.8% of students, 57.5% of staff) who reported solely attending external (non-HEI) gymnasiums and/or leisure facilities. Although causality cannot be objectively established in the context of the study’s design, the current qualitative data appears to support this hypothesis. Overall, it is evident that addressing the sedentary sociocultural norm within the case HEI should constitute a strategic pre-requisite to, and/or covariate embedded within, the design and implementation of any future PA initiatives and/or interventions.
Body Habitus and Nutrition

In Study One (Chapter 4) and Study Two (Chapter 5) of this thesis, self-reported height and body mass were used to calculate the prevalence of overweight/obesity amongst both students (38.3%) and staff (49.4%), respectively (Bickerdike et al., 2019; 2022). Interestingly, both cohorts tended to under-report and/or under-recognise obesity, whereby the calculated obesity prevalence consistently exceeded each cohort’s self-perceived prevalence. This discrepancy was particularly evident amongst male students (of whom 83% under-estimated obesity) and male staff (calculated prevalence of 64.4% vs. perceived prevalence of 39.7%).

As a global public health issue, overweight/obesity is a multi-factorial and complex phenomenon, influenced by the interplay between genetics, environmental factors, and personal behaviours such as diet and physical activity (Naukkarinen et al., 2012). It has been projected that total costs associated with obesity in Ireland could amount to €9.88 billion by the year 2030 (Keaver et al., 2013) and therefore settings-based interventions to investigate and address the determinants of body habitus are of direct socio-economic interest.

The current qualitative data yielded important insights into participants’ perceptions and knowledge of body habitus. Firstly, despite the calculated overweight/obesity prevalence of 38.3% (Bickerdike et al., 2019), overweight/obesity was not frequently referenced by students of the current study as part of their lived experiences. Fundamental mediators of energy balance, such as PA and healthy eating, were discussed as part of an overarching ‘healthy lifestyle’, but it was interesting to note that these domains were not explicitly linked to body habitus within students’ discourse and discussions.
Secondly, an interesting disparate pattern emerged amongst staff regarding the prevalence of overweight/obesity within the case HEI. In this regard, some staff explicitly perceived that student and/or staff colleagues were overweight/obese, whereas others actively refuted that overweight/obesity was prevalent on campus. Furthermore, some staff considered students’ body habitus as physiologically healthier, relative to previous decades. Although an objective assessment of the accuracy of these observations was beyond the scope of the current thesis, the apparent discrepancy between participants’ perceptions, and the reported prevalence, of overweight/obesity on campus warrants further urgent investigation. Such key findings in the current study further support the hypothesis of ‘visual normalisation’ of overweight/obesity within the case HEI, as discussed in Study One (Chapter 4) and Study Two (Chapter 5), in addition to international literature (Robinson, 2017; Robinson & Hogenkamp, 2015).

In terms of nutrition, it was reported in Study Three (Chapter 6) that substantial proportions of students (48.1%) and staff (54.3%) did not perceive healthy dietary choices were enabled on campus. Given the marked complexity of nutritional behaviours, the current study aimed to provide a deeper socio-ecological insight into the determinants of habitual dietary practices. At environmental level, several staff perceived that it was inherently difficult, and more expensive, within the context of the campus food environment to habitually engage in healthier dietary choices. Concurrently, several staff commented on the relative abundance of cheaper, energy-dense and/or convenience foods, and one student also noted the financial barriers to optimal nutrition experienced by students within Satellite campuses. At a departmental and/or programmatic level, the normative culture within one’s peer and/or immediate collegial community was also cited as influential in terms of dietary choices and propensity to prepare ‘healthier’ food in
advance. However, as previously outlined in Study Three (Chapter 6), campus food and beverage outlets were not under the direct remit of HEI’s management, and it should be borne in mind that all data throughout the current thesis was self-reported. Nevertheless, a comprehensive, validated multi-domain audit of the HEI’s food environment, encompassing all campuses, is urgently warranted in order to (i) ascertain the validity of participants’ assumptions regarding the availability of healthy options, and (ii) ensure that future interventions to address either sub-optimal nutrition, and/or overweight/obesity within the context of the campus food environment will be informed by robust empirical data.

Finally, it was pertinent to note that both student and staff cohorts perceived nutritional choices as both an outcome, and/or precipitant, of low mood, reduced motivation, frustration and/or negative interpersonal interactions. This was consistent with previous research involving 728 first year students of a HEI in Australia, whereby students who exhibited higher stress trended towards less healthy dietary behaviours (Papier et al., 2015). Given the pervasive culture of stress discussed in Section 7.4.2 above, the complex and intricate links between micro/macro nutrient intakes, mood, motivation, and mental wellbeing amongst the case HEI’s population warrants immediate and further longitudinal investigation.

Sleep

In terms of sleep, 79.3% of students (n=1,215), and 82.2% of staff (n=189) reported a habitual sleep duration of less than 8 hours during a typical ‘college’ and/or ‘working’ week in Study One (Chapter 4) and Study Two (Chapter 5), respectively (Bickerdike et al., 2019; 2022). Worryingly, the qualitative data in the current study appeared to confirm
pervasively poor sleep patterns amongst substantial proportions of the HEI’s campus population. Of note, participants suggested that sub-optimal sleep patterns were frequently attributable to, or associated with, some aspect of their engagement with the HEI. In this regard, students perceived a requirement to consciously sacrifice sleep in favour of attending to assessments and/or other tasks associated with their academic programmes; “it would be hard to incorporate everything into your day and get your full eight hours of sleep at night, especially if you’ve things to be worrying about like deadlines or assignments or things like that” (FG17, Current UG Students & SU Officer). Similarly, staff recalled instances of insomnia due to occupational worries and/or stressors, “…we have long working hours, there are things that keep you awake at night, sometimes” (IV16, Senior Academic, HoD). Poor sleep is a well-established risk factor for a myriad of adverse outcomes such as overweight/obesity, cardiovascular disease, depression, Alzheimer’s disease, and Parkinson’s disease (Hale et al., 2020). It is therefore imperative that the sleep patterns of both students and staff are examined longitudinally in future research to inform multi-domain, ecological interventions designed to optimise circadian rhythms.

7.4.5 Interpretive Considerations and Limitations

The current study encompassed novel and comprehensive dual-cohort analyses, and aimed to address a substantial dearth of empirical evidence in Ireland within the domain of campus HP. Nonetheless, there are several contextual and interpretive considerations that should be borne in mind when drawing inferences from these data.
Although the full sampling strategy and demographics of respondents have been discussed in more detail in Chapter 3, the relative under-representation of undergraduate students should be noted. It was also concerning that the scheduling of only one focus group session wholly dedicated to undergraduates (‘Satellite Campuses sub-group’) progressed to completion. Further to this, only two students presented to same, and the intended focus group proceeded as a dyadic interview. These presenting difficulties, and indeed the substantial ‘non-response’ rates evident across all target participant groups, served to further re-enforce this study’s key findings. In this regard, such uniform ‘non-response’ supports the existence of pervasive stress, time-constraints, and heavy workload-related commitments within the case HEI as factors that precluded meaningful engagement with, and participation in, the current study.

In addition, although previous quantitative Chapters in this thesis stratified data by gender (Study One, Chapter 4 and Study Two, Chapter 5), given the highly sensitive subject matter, this approach was not employed in the current study, to preserve participants’ anonymity. Finally, as an unprecedented determinant of health, wellbeing, economic stability, and indeed the fundamental structures of higher education itself, it is imperative to acknowledge the emergence of COVID-19 and its associated public health measures, as a global crisis that may have (i) compounded the qualitative health-related challenges and stressors described within the current study, and (ii) complicated some of the comparisons with quantitative data that were gathered prior to the pandemic. Although unforeseen in the context of the planned QUAN-QUAL methodological sequence of this thesis, capturing qualitative data after the onset of the pandemic, ensured that the lived experiences of both students and staff were more ecologically valid in terms of reflecting the volatility and uncertainty within the higher education sector. Overall, rather than
creating additional challenges, the current data suggested that COVID-19 magnified and heightened the extant challenges that had been previously alluded to in earlier quantitative chapters of this thesis. Hence, the rationale for multi-component interventions within the case HEI to alleviate stress, and to promote healthier lifestyle behaviours has been even further substantiated.

7.5 Conclusion

In Ireland, HEIs have been unequivocally called to action to implement the settings-based national Healthy Campus Charter and Framework, and to adopt a ‘whole-campus’ approach towards embedding health within each HEI’s organisational governance, structures and environmental cultures, in addition to facilitating continuous capacity building amongst diverse campus populations (Healthy Ireland, 2021b). The multifaceted theoretical basis of the settings approach to HP within HEIs has been previously acknowledged (Dooris et al., 2014), and as a further layer of complexity, practitioners also need to consider additional constructs such as the diversity of each setting’s population, local resourcing arrangements, and distinct organisational cultures (Poland et al., 2009). In this regard, the current qualitative study has endeavoured to empirically inform a triangulated pragmatic guide to the cohesive mapping, design, implementation, and evaluation of tangible preliminary HP interventions and activities, to embed an overarching settings-based campus HP initiative within the ‘live’ ecosystem and culture of a complex case HEI.
Chapter 8

“...these are people issues, they’re not student and staff issues, they’re society issues, they are everybody” Qualitative Perspectives of Students and Staff to Inform the Operational Structure of a Health Promotion Initiative within a Multi Campus HEI in Ireland
8.1 Introduction

Higher Education Institutions (HEIs) constitute uniquely strategic, yet somewhat under-utilised, societal conduits through which positive and impactful health and wellbeing initiatives may be successfully implemented (Sarmiento, 2017). The reach of campus health promotion (HP) initiatives inherently extends to sizeable cohorts of students and staff, in addition to substantial networks of community stakeholders, who participate in activities under the multi-faceted remit of a quintessential HEI (Came & Tudor, 2020; Darker et al., 2021; Dooris et al., 2019; Waterworth & Thorpe, 2017).

The ‘Healthy University’ (HU) approach, also referred to as ‘Healthy Campus’ and/or ‘Health Promoting University’ (HPU) (Dooris et al., 2014; Sarmiento, 2017), is predominantly aligned with settings-based HP (Innstrand & Christensen, 2020), which posits that health can be mediated through, and by, the contexts and environmental structures of daily life (Darker et al., 2021; Whitelaw et al., 2001; WHO, 1986). The international emergence of the HU and/or HPU approach was underpinned by a seminal settings-based framework that conceptualised a HPU as a HEI that:

i. Exhibits a tangible commitment to health

ii. Enables access to health-promoting environments

iii. Facilitates health-promoting choices and capacity building amongst diverse campus populations

iv. Embeds health within multidisciplinary curricula

v. Purposively extends HP advocacy to encompass the wider community

(Tsouros et al., 1998).
The constructs and potential applications of the HU approach have been expanded in more recent international literature (Dooris et al., 2020; Dooris et al., 2010; Innstrand & Christensen, 2020; Suárez-Reyes & Van den Broucke, 2016), and in the recent work of Darker et al. (2021), which outlined the implementation of a HU-aligned campus HP initiative (‘Healthy Trinity’, Trinity College Dublin) within a single Irish HEI. Global practice networks have also emerged, with a shared collective purpose of advocating for, and progressing, the HPU/HU agenda (Dooris et al., 2019). In 2015, the Okanagan Charter for Health Promoting Universities and Colleges unequivocally called global HEIs to action, advocating for the embedding of health within their core operations, mandates, and cultures (Okanagan Charter, 2015).

In a societal context, given the substantial burdens attributable to non-communicable diseases (NCDs), the settings-based paradigm has underpinned the Irish Government’s overarching HP strategic framework to leverage the capacity of cross-sectoral stakeholders to enable positive health (Dept. of Health, 2013). Within the Irish higher education sector, there has also been a renewed impetus to enact the ‘whole-setting’ approach to HP, precipitated by the Government’s resourcing of, and commitment to, a national roll-out of the Irish Healthy Campus Charter and Framework (Healthy Ireland, 2021b). Although several HEIs in Ireland have previously published standalone HP strategies (Darker et al., 2021; UCD, 2016), the Government driven roll-out of the Healthy Campus Framework has been recently repositioned under the remit of the Irish Higher Education Authority (HEA) (Dept. of Health, 2021), which has served to re-emphasise the sectoral mandate to deliver on this agenda.
In terms of informing the strategic development of campus HP initiatives within Irish HEIs, there has been notable international commentary pertaining to the theoretical basis and broad application of the HU ethos, from which guiding principles may be inferred. Firstly, it is pertinent to note the theoretical breadth of the settings approach to HP, which has in turn drawn upon the domains of ecology, salutogenesis, systems theory, and organisational development (Dooris et al., 2014). HU-aligned campus HP initiatives therefore necessitate a ‘whole-HEI’ approach; a systematic and seismic organisational transformation towards the creation of a cultural environment that cohesively embeds health within all activities and policies under the remit of an overarching operational structure (Darker et al., 2021; Dooris et al., 2020). However, given the complexity of the HU approach, it is unsurprising that there appears to be not only a national, but a global paucity of rigorous ‘whole-HEI’ implementation and evaluation studies reporting on tangible HU impact metrics and outcomes (Innstrand & Christensen, 2020; Suárez-Reyes & Van den Broucke, 2016).

Further insight into international best practice in terms of the implementation of the HU approach has been outlined within a qualitative case study conducted in the United Kingdom (UK) that comparatively examined two HEI settings; a HU ‘exemplar’ versus a ‘contrary’ HEI (Newton et al., 2016). Relative to the ‘contrary’ case setting, the ‘exemplar’ HEI was characterised by a more visible structural and budgetary commitment to the enactment of the HU ethos, a more explicit alignment of the HU initiative with the HEI’s core mandate and strategy, and greater ‘buy-in’ to the HU agenda by Senior Management (Newton et al., 2016). In a general context, securing the support and endorsement of Senior Management and/or Executive Leadership for the implementation of the HU approach within contemporary HEIs has been cited as a fundamental pre-
requisite to the attainment of meaningful organisational impact (Darker et al., 2021; Newton et al., 2016).

In practice however, whilst the collective responsibility for health and wellbeing across all strata of a HEI has been previously acknowledged (Okanagan Charter, 2015), it appears that the disciplinary expertise and/or primary practice domain(s) of the personnel drivers and/or contributors to the implementation of HU initiatives within international HEIs remain highly variable. Although a previous systematic literature review indicated that HU initiatives tended to be predominantly housed within health-related faculties (Suárez-Reyes et al., 2019), in more recent cross sectional research conducted across the UK to evaluate members’ perspectives of the UK Healthy Universities’ Network (UKHUN), the HEI representatives who participated had posts anchored in a variety of HEI strata (Dooris et al., 2019). In this regard, 37% cited an ‘academic department’, 19% cited ‘student services’, 13% ‘HR’, 13% ‘sports’, and 12% represented another stakeholder and/or dept. Interestingly, only 6% of participants in that study reported strategic and/or Senior ‘directorate’ remits (Dooris et al., 2019).

Finally, HP literature has also emphasised clear and opportunistic alignments with parallel agendas such as sustainability (Dooris, 2013) and ‘Equality, Diversity, and Inclusion’ (EDI) (Darker et al., 2021; King et al., 2020). Although these agendas continue to gain global prominence in their own right (UN, 2015), it was notable that equality and diversity were explicitly encompassed within students’ perceptions of a ‘Healthy University’ in a qualitative study conducted to inform a campus HU initiative in the UK (Holt et al., 2015). In a broader context, that study also emphasised the rationale for ensuring adequate co-creation of HU initiatives that are informed and evaluated by
student perspectives, positing that the HU self-evaluation instrument endorsed by the UKHUN may have under represented the student voice in this regard (Holt et al., 2015). Across the Irish higher education landscape, there are variances in magnitude, cultures, governance structures, resourcing models, and strategic priorities evident between publicly funded HEIs. The Irish ‘Healthy Campus’ Framework (IHCF) is essentially non-prescriptive by design, favouring a macro-level paradigm that encompasses a suite of recommendations and principles pertaining to broader thematic ‘action areas’ (Healthy Ireland, 2021b). Although progression towards greater international reliability and rigour of the HU/Healthy Campus approach is certainly warranted, the importance of identifying and preserving the unique regional and/or cultural context of each HEI has also been reported, and purposive cultural adaptation may be required to engage and empower diverse campus cohorts to align with thematic priorities, and/or to address setting-specific established needs (Suárez-Reyes & Van den Broucke, 2016).

Therefore, the current study aimed to examine stakeholders’ perspectives regarding the delivery of campus HP activities and initiatives within a multi-campus case HEI in Ireland, and to serve as a comprehensive setting-specific critique of the level of HP provision to date, relative to stakeholders’ perceived ‘ideal’ operational models and structures. The specific objectives were as follows:

i. To investigate student and staff perspectives regarding the rationale for campus HP and to elicit their perceptions of, and/or previous participation in, activities under the remit of the ‘preliminary’ campus HP operational structures (as outlined in Chapter 1).

ii. To ascertain participants’ views regarding current health and welfare supports within the case HEI
iii. To gather and explore participants’ perceptions regarding optimal operational structures, resourcing model(s) and the feasible scope of a campus HP initiative within the case HEI

iv. Similarly to previous work (Dooris et al., 2010; 2020), to identify any latent drivers and/or internal synergies that could serve to progress the implementation of a HU-aligned campus HP initiative, within the operational ecosystem of the case HEI

8.2 Methodology (see Chapter 3, pp.155-166)

The current study adopted a qualitative design, within the broader context of a phased mixed methods (QUAN-QUAL) programme of research (Bickerdike et al., 2018; 2019; 2022), purposively designed to inform a campus HP initiative. Qualitative research has been proposed as a particularly amenable exploratory process to (i) capture the complexity of human lived experiences, (ii) derive and/or examine theoretical hypotheses, and (iii) constitute a medium through which to highlight and/or advocate on behalf of vulnerable groups and/or specific societal issues (Thyer, 2012). As outlined within the seminal Ottawa Charter for Health Promotion (WHO, 1986); advocacy, community participation, empowerment, and equity are fundamental principles of HP. In this context, a qualitative approach was employed as a conduit through which the perspectives of students and staff within the case HEI could serve to co-create the operational structures of a campus HP initiative to empower and enable all strata of the diverse, multi-campus community.
The sequential methodological approach, purposive sampling strategy, and ethical considerations of the qualitative phase of the current research, from which both Study Four (Chapter 7) and the current study were derived, have been described in greater detail in Chapter 3. In brief, the target population were contacted via institutional email with a request to participate in either a semi-structured interview (IV) and/or focus group (FG) to inform a bespoke campus HP initiative. Indicative structural guides were devised to maximise reliability (Table 3.6 and Table 3.7). Notably in the context of the current study, both the IVs and FGs encompassed items that ascertained participants’ reactions to two visual prompts; the first of which summarised health challenges identified amongst students and staff in earlier quantitative phases of the research (Bickerdike et al., 2019, 2022, see Figure 3.1), and the second contained a visual representation of the case HEI’s ‘current’ campus HP operational structure, relative to a previously proposed ‘ideal’ model (Bickerdike et al, 2018, see also Figure 3.2). All IVs and FGs were conducted remotely, and recorded using a HEI-licensed Zoom account from which verbatim audio transcripts were imported into NVivo (Release 1.6.1) software package for further analysis.

As an initial analytical approach applied across the qualitative data corpus (Figure 3.3, p.166) inductive thematic analysis was conducted in accordance with the recommendations of Braun and Clarke (2006). Following this preliminary inductive phase, a subsequent divergent deductive phase was employed, from which Study Four (Chapter 7, rooted within socio-ecological theory to deduce multi-level determinants of health and wellbeing within the case HEI) and the current study (operational recommendations for a campus HP initiative in accordance with the HU/Healthy Campus paradigm) were subsequently derived. Therefore, as previously illustrated in Figure 3.3, the current study included data coded to a series of themes and sub-themes identified
within the initial inductive phase that related to campus HP practice and structures. The deductive approach subsequently applied to these extracted data was rooted within the constructs of the international HU/HPU principles (Dooris et al., 2010; Dooris et al., 2014), in addition to the IHCF (Healthy Ireland, 2021b), and resulted in a final structure of ten themes pertinent to the practice of campus HP within the context and environment of the case HEI.

Although the current sample comprised both student and staff strata of the case HEI, it should be noted that undergraduate students’ participation in this qualitative phase of research was highly constrained by (i) timetabling commitments that impacted upon FG scheduling within the semesterised model of programme delivery, in addition to (ii) internal challenges in terms of securing authorisation to contact undergraduate class representatives across the HEI. In the specific context of health and wellbeing, however, a notable commentary by Braun and Clarke (2019) re-enforced the intricate value of qualitative thematic analyses to further inform, and complement, quantitative data by bridging the gap between the magnitude of a phenomenon from a human perspective and its relative frequency within a statistically generalisable quantitative dataset. Given the substantial quantitative analyses conducted across this designated programme of research to date (Bickerdike et al., 2019; 2022), the current qualitative paradigm aimed to examine the lived experience narratives and perspectives of a sample of stakeholders, rather than securing proportional representation.
8.3 Results

8.3.1 Perceived Rationale and Responsibility for Health Promotion Within the Case HEI

Overall, there appeared to be a consensus that HEIs constituted valid and pragmatic health promotion (HP) settings, within which substantial cohorts of young adults can be influenced at a key habit-forming life stage.

“Universities have some of the biggest populations of young people and those are the people that are going to be living in your country for the next 60 odd years, so I think it's really important” (FG09, Undergraduate (UG) Student)

In terms of the rationale for HP within the case HEI, the adjunctive social advocacy mandate of higher education institutions (HEIs) was encapsulated by one participant, who perceived HEIs as, “interventionists with regard to, kind of, social progress” (FG01, Senior Academic, HoD). The temporal prominence of the HEI within a student’s life for the duration of a typical academic programme was also outlined.

“...students are spending, maybe up to eight hours a day in the university setting, that's a third of your day you know” (FG14, Current Postgraduate PG Student & UG Alumnus)

“...we have the full-time student for four years, and we're a huge part of their life” (IV02, Senior Academic, HoD)

Enabling positive health was perceived by both students and staff as fundamentally ingrained within the educational mandate and duty of care of HEIs, with opportunities to educate beyond programmatic content to encompass health related knowledge, skills, and competencies.

“We do our best while we have them and our primary outcome is educational, but it would be a waste of opportunity not to actually intervene, or persuade, or coax people in a particular direction, whether it’s around their health or general wellbeing while we have them” (FG01, Senior Academic, HoD)
“I know the main focus is educating students, but I think, like, it’s just a huge opportunity for them to also educate on things that are going to affect students for the rest of their lives” (FG15, Students’ Union (SU) Officer)

“...education is about leading out, so like the educators, should lead (…) there is a duty of care on the university (...) if (students are not) living a healthy lifestyle, they won’t be able to function properly from an educational perspective” (IV09 Executive Management)

HEIs were considered opportune settings within which to enable, rather than autocratically impose, healthier lifestyle behaviours amongst student cohorts. From a societal perspective, one staff member proposed that “leaders of tomorrow and the leaders of the future” were likely to reside amongst campus populations (IV02, Senior Academic, HoD). Students also perceived a value in the provision of reliable health-related information, while both students and staff appreciated that habitual behaviours adopted during higher education were likely to persist later in life.

“I think that anything that kind of gives more information, especially to students our age is valuable, so whether it's mental health, or medical health, or whatever” (FG09, Current UG student)

“I think it's definitely a time to really push into people's lives, in a non-invasive way, but just to really try and get people to be as healthy as possible and realise that it's a lifelong journey that they need to take with them” (FG11, Current PG Student & UG Alumnus)

Several participants perceived an ethical and unequivocal duty of care upon HEIs to promote health and wellbeing. In addition, one PMSS participant aligned campus HP activities with broader strategic objectives of the HEI, such as community outreach.

“(HP) is simply something (that) we are ethically and morally bound to take on board” (IV16, Senior Academic, HoD)

“I think that we’re a vast community here in (HEI name) and that it's important that the promotion of (HP) strategies are extended both to students and staff and, indeed, we have a good relationship with our local residents, so you know, why not bring them into that?” (IV06, PMSS)
8.3.2 Internal Procedures and Pathways: Accessing Supports, Resources, Information

It was collectively accepted that there were numerous health and welfare supports situated within the case HEI (Counselling Service, Medical Centre, Human Resources initiatives, external Employee Assistance Programme, ad-hoc initiatives, and informative activities). However, both students and staff expressed frustration in relation to the promotion of, and limited access to, such supports.

“I think, maybe it's (information regarding health and wellbeing initiatives) not advertised well enough to people my age in at least in a way that we can access it well” (FG09, Current UG Student).

Universal awareness of, and access to, sufficient student supports without stigma was encompassed within one student’s vision of a ‘Healthy University'

“...we have services obviously on campus but I don't think a lot of people will realise that there are like counselling services and stuff and just having people realise that there's no shame in going for that, some people might be embarrassed to be seen walking in there, but just realising that there's no shame in it and everyone needs help sometimes and that it's a very open community and everyone will accept everyone else” (FG11, Current PG Student & UG Alumnus)

Accessibility to welfare services was not perceived as equitable, and many supports were not available to part-time students.

“...the part time students don't have access to the medical centre or to counselling, which is an issue. And I’ve often said in the past, they would be happy to use those services, even within office hours. But because they only pay a tuition fee, and they don’t pay a registration fee; they don't have access to all of those services” (IV02, Senior Academic, HoD)

Some students described a lack of awareness of the extent of the supports available, and described a lack of agency to avail of supports, or to attend initiatives that clashed with lectures and/or academic activities. Of concern, a student based primarily within one of
the HEI’s satellite campuses outlined logistical difficulties with engaging with activities and availing of supports situated on the main campus.

“...all of the (Support Service) talks would have been on main campus, and it just wasn't... like I couldn't get there, and be back in time for classes, or it would just take too much out of my day. I guess now with (online) it's still more available, but again, a lot of it clashes with lectures that I just can’t miss” (FG09, Current UG Student)

Student and staff participants who were based on the main campus also recalled difficulties in terms of either directly accessing (students) and/or referring students (staff) to certain medical and welfare supports.

“...I had gotten an ear infection, I couldn’t go to the doctor because it was completely booked up (...) otherwise people miss out and if they're kind of like I can’t get an appointment with the (HEI name) doctor, I won't get it with my own doctor, they’ll give up and that could be a health problem that goes unnoticed” (FG11, Current PG Student & UG Alumnus)

A paradox appeared to exist whereby the ethos and normative practice of the HEI encouraged management and academic staff to refer any students in difficulty to supports such as the Counselling Service, yet timely access to this critical service was not possible in some cases.

“...we ordinarily ask any student who's having any little bit of a wobble, you know, ‘have you thought about going to counselling?’ And you're kind of almost hoping that they're (going to) say ‘yes I’m already in it’, or ‘I have one externally’, because (if) they say ‘yeah actually I wouldn't mind an appointment’ you’re kind of saying, okay that could take four weeks here now, so what do I do in the meantime?” (FG01, Senior Academic HoD)

However, one PMSS member refuted the widely held belief that the Counselling Service was over-subscribed, and proposed that such misperceptions could lead to students either prolonging seeking support, and/or postponing seeking emergency support when in acute mental health crisis.
“…seeming busy all the time isn't good for us in terms of how the students perceive us (...) students said to me, ‘I didn't expect to get in so quick because my understanding is that you're bursting at the seams’, and I don't want people thinking that, I don't want them thinking that we're bursting at the seams and we can’t take you on, and you would want to be on death’s door if you’re going to come in the door to us, because then they do wait” (IV04, PMSS Manager)

Finally, it was described by PMSS staff members that students’ access to financial and/or disability supports were subject to, and tailored, based on individual needs assessments being conducted with each individual applicant. This appeared to place substantial psychological strain and stress upon PMSS members due to (i) their pastoral cognisance of the need for timely processing of the substantial volume of applications, (ii) increased administrative demands and record-keeping obligations, and (iii) the nature of complex cases, whereby staff were habitually exposed to distressing and emotionally intense student scenarios, without any respective supervision with a qualified professional.

“…panic attacks. anxiety, you know, (physical) health conditions, you know, significant ongoing illnesses, it is part of my day multiple times a day. And not only that, I also have a team of staff that I’m trying to support who are extremely busy, who get extremely upset students into them every single day, and we have no supervision. And we have to take that, and go home with that, and that weighs very heavily on me” (IV07, PMSS)

8.3.3 Paying ‘Lip Service’ to Health Promotion?

There was a perception amongst some Senior Staff that the case HEI tended to observe a default policy of outsourcing health and wellbeing. One participant suggested that HR were fundamentally disinterested in new and/or ‘personal’ initiatives (“but to be very honest I don't think they're interested... and that’s being really honest”), and described an unsuccessful effort to advocate for the introduction of a specific health-related policy with HR as follows:
“I was just met (with a) blank wall, it was just shocking really (...), I had written a very big, long document, 10 pages, and I was told if I condense that to one page that (might) be acceptable, but then the solution was contact the EAP (Employee Assistance) Programme”
(FG08, Senior Management)

Secondly, there was a trend towards isolated HP projects, and lack of lateral communication with regard to the implementation and dissemination of health and wellbeing initiatives and activities.

“...we're all doing amazing pockets of fantastic work, but nobody knows what anybody else is doing you know? So like, where is the internal, you know, sharing of information? Where’s the mechanism for us to do that?” (IV07, PMSS)

Finally, some participants expressed concerns regarding the apparent lack of prioritisation of health and wellbeing explicitly within the HEI’s agenda. A sense of “lip service” was described, with a lack of overarching leadership. Even amongst Senior HEI figures, there was a sense that health and wellbeing tended to become lost amidst the “day to day busyness” of the HEI.

“…it's just day to day (busyness) isn’t it? So many things that we have to think about that you know we deal with exactly what's in front of us, so, so (sic) what does it take for us to, to bring that in front of ourselves?” (IV12 Executive Management)

“Well, I can't argue with our current position, like, I have no sense…as I said, of a real activity to make us a healthy campus” (FG3, Senior Academic HoD)

Notably, Senior Management strata (Heads of School, Heads of Department) expressed frustrations regarding their workloads and the unrealistic expectations placed on them. Their perception of ‘lip service’ appeared to emanate from the rhetoric and/or inaction exhibited by Executive HEI leadership regarding the preservation of work-life balance.

“...it actually kind of grates on me sometimes when people talk about, at a senior level, you know, the importance of work life balance (but) not doing anything to support that. So since (before) I
became Head of the Department, the key joke around here is the (Head of Department) is the worst job in the place, but nobody does anything about it” (FG2, Senior Academic, HoD).

“... our level is supposed to be leadership, and to be those champions, but sure we hardly have enough hours in the day to, you know, to do even the most basic things” (FG06, Senior Management)

8.3.4 Key Regulatory Influences Over the Progression of Campus-Wide Agendas

Regulatory and Legislative

Legislative and external regulatory influences were referenced as key drivers of cultural change within the HEI, substantiating resource cases and internal policies to advance certain agendas. In terms of staff wellbeing and work-life balance, external regulatory influences were anticipated to underpin the future design of flexible working policies within the HEI.

“Certainly remote working, and some of the flexible working opportunities that will arise, I think, will be of huge benefit. So I (I think) it could be quite positive (if we) work it properly, so we do need to spend a lot of time now, we are waiting for the legislation from government next year” (IV05, Executive Management)

Resourcing was viewed as the fundamental metric from which to evaluate the tangible legitimacy of the HEI’s commitment to a specific agenda. In this regard, Equality, Diversity and Inclusion (EDI) was also discussed as a parallel exemplar resourcing model.

“Like the parallel is EDI. EDI became a major issue nationally and understandably so, it's now a major issue in (HEI name) in a way that wasn't in (prior entity that amalgamated to form current HEI) by virtue of the fact that there's leadership around it and there’s structures put in place to, to implement it. Once you do that, it becomes a big deal for everyone, because they know what's expected, it's not lip service it's real, it’s grounded, it’s there” (FG01, Senior Academic, HoD)

“...so I think the organisation would need to get behind this (campus health promotion), so the same way if the President is talking about EDI. I think positioning it (within the) organisation (....)
so like we have an EDI manager and I’d probably look and see how EDI was resourced” (IV08, Senior Academic, HoD)

Whilst it was acknowledged that the substantial resourcing and progression of EDI had been necessitated and accelerated by broader legislative and sectoral obligations, in contrast, it did not appear that the promotion of health and wellbeing had yet attained the critical legislative/sectoral impetus in this regard.

“...a large part of my role is translating the environment back into the institutions so we're constantly scanning the environment in terms of what's out there, whether it's either legislative or regulatory or just best practice. So we have had some really good initiatives I think coming in, but I think a good example is the Equality Diversity and Inclusion, I mean that's, that's really driven by the State I think at this stage, and that is (coming) into the institution. I could see similarly, a wellbeing sort of groundswell and a packaging of that but …I think that might be for the future” (IV05, Senior Management).

External Recognition and Value

It was suggested that the case HEI places an incrementally higher value upon external funding, awards, accreditation, and success, relative to internal activities or contributions. Several participants also alluded to the substantial cultural and influential capital within the HEI that could be attained by securing external recognition and validation.

“...if you get recognition for yourself or for your activity outside of your home institution, right? Then the home institution begins to realise how good you are as well” (IV09 Executive Management)

“I think we're challenged sometimes for us to recognise internally what's happening when actually, you know, we have had loads of recognition internationally” (IV16, Senior Academic HoD)

In terms of HP, it was implied that attaining external validation may be a prerequisite to, and a substantial accelerator of, internal recognition for any HU activities and initiatives. Leading national HP action, and becoming ‘the best’ at same, was viewed strategically as a mechanism of positioning the case HEI as an exemplar in Ireland. A number of
participants considered the expansion of HP activity from the paradigm of competition within the HE sector, suggesting that the case HEI should aspire to become recognised as a model of best practice, essentially out-performing other HEIs in this regard.

“There could be (a case) made to the Dept. (of Further and Higher Education, Research Innovation and Science) or to the HEA, to provide funding towards the (campus HP) initiative (…) and that we can be seen as a model (for) other HEIs in the country and internationally as well”

(IV02, Senior Academic, HoD)

“…yeah I mean wouldn’t it be fantastic if we were to be the university that, you know, leads there, best University in Ireland let’s take that as a starting point in terms of health promotion”

(IV12, Executive Management)

As a further aspect to this apparent relative under-recognition and/or retrospection upon the HEI’s internal zeitgeist, it was pertinent to note that a number of Senior Academic staff recalled the experience of being presented with baseline campus population health data from this broader HP research project during an internal Senior Staff event in 2020. One participant remarked upon the surprise and shock that was palpable amongst attendees at the extent of the internal health-related issues revealed by these data.

“Well I remember the morning you gave a presentation to the senior staff forum, a number of years ago now, you may have done so more than once if I’m not mistaken, There was one where you had the results and I remember colleagues’ reactions to that where you had some stats around drug use and so on that, and there was kind of intakes of breath, there was kind of a smack in the face kind of vibe to a lot of people”

(FG01, Senior Academic, HoD)

“…I also remember that morning where people were shocked by some of the things you found”

(FG02, Senior Academic, HoD)

8.3.5 Perceptions and Visions of a Healthy HEI Setting

Participants reported a breadth of definitions of a ‘Healthy University’ (HU). There were suggestions that a truly HU would require systematic change, and a seismic shift in the current paradigm towards an organisation whereby “everything we do needs to be
examined (from the) health lens, and not even a health lens but a wellbeing lens” (IV02, Senior Academic, HoD).

Equitable access to information and supports was referenced by a number of students. One student also perceived a HU as a happy setting, whereby students felt psychologically safe amongst peers, and felt comfortable to speak openly and honestly within the broader overarching structures of the organisation.

“…an environment where people feel like they can speak openly and honestly. And I know that's obviously way easier said than done, but yeah that's what I think would be a healthy university” (FG13, Current PG Student & UG Alumnus)

“…happy students really, would be really important. It's not even having extremely low obesity rates or anything like that it's, I suppose, if the students are very happy and people like coming to work and people enjoy coming to college, as long as they're happy” (FG11, Current PG Student & UG Alumnus)

One student conceptualised a HU as one that supported health through its community culture, supportive environment, and efforts to promote students’ self-efficacy and overarching agency to engage in health-promoting lifestyle choices within the campus setting.

“I suppose a healthy university to me is all about having, I suppose, a community, which is, you know, giving free choice there, but giving people also the information to make (the) choices when it comes to nutrition and also physical activity” (FG14 Current PG Student & UG Alumnus)

8.3.6 Prior Exposure to, and Awareness of, the Campus HP initiative

Participants reported mixed perceptions of, and exposure to, activities to date under the remit of the HEI’s designated campus HP initiative. Some participants had no familiarity with the initiative, and/or recalled vague memories of seeing emails or posters, with little further engagement with same. In terms of previous events/activities under the remit of
the initiative, the most positively referenced activity was a healthy cooking demonstration, commended for its pragmatism as a capacity-building event.

“…there was also a cooking day for us where we were taught to cook and I actually still make some of the meals, that I was taught there because I remember thinking they were really easy” (FG11, Current PG Student & UG Alumnus)

Notably, one member of Executive Management recalled the event, but ironically did not attribute it directly to the campus HP initiative.

“…a few years back the Students Union did work on, I know (Head of Student Engagement) did it as well, work on…and people in (another HEI Dept.), they put on programmes to teach younger students coming in first years, on how to eat and cook properly (…) you put these positive options in front of students and they will pick them up, and I think the same goes as regards to staff.” (IV09, Executive Management)

Further to this, several recent Alumni consistently, yet inaccurately, attributed a campus recreational walk/run event that was implemented by another campus stakeholder, as being directly associated with the HEI’s HP initiative.

“I think it was to do with (HP initiative), there was a walk and I think I was in first year and we were asked to station ourselves along the walks that we could tell people where to go. So that was my kind of introduction to (HP initiative), was the fact that you were trying to introduce some kind of walking scheme” (FG11, Current PG Student & UG Alumnus)

“I also remember doing that walk and things like that” (FG12, Current PG Student & UG Alumnus)

“I remember that walk though, as well, I think everyone went on that walk *laughter*” (FG14, Current PG Student & UG Alumnus)

One SU Officer alluded to a quasi-cultural barrier to the dissemination of information pertaining to the HP initiative, outlining that the majority of students tended to engage only with, and within, their academic programme, and/or to frequent only those areas of campus around which the majority of their learning activities were situated. Therefore, it
was proposed that students not directly affiliated to the initiative’s host Academic Department may not have been aware of, or willing to engage with, the campus HP initiative.

“…we’ll say if you go down to the likes of the (specific corridor) with the (academic discipline) students or the apprentices and the block releases because they’re so far away as well from the likes of the gym or the (specific building) and different places like that they won't be too inclined to come over that far, and they might not see the posters or, we’ll say, the advertising”

(FG16, SU Officer)

Conversely, Alumni of academic programmes within the Academic Department that led the stated campus HP initiative described how elements of the designated research activity of the HP initiative had been embedded directly within their programmatic curriculum.

“I kind of remember it was in like (staff member’s) module we did health promotion and I remember using your studies and your surveys, because we were looking at sleep and things like that” (FG12, Current PG Student & UG Alumnus)

In addition, students within this host Academic Department were habitually facilitated to engage with, and attend, events under the remit of the campus HP initiative. In this regard, one student reported positive perceptions of a previous mental health event, and expressed a view that students from other programmes were unlikely to have been enabled to attend such events to the same extent.

“…I actually thought (previous mental health event) was really good I remember, like our whole group thinking it was good (...), because of course (we were really) encouraged to go and, obviously, a lot of our lecturers would value their health and wellbeing so they would have been obliging when it came to missing a module or a lecture. Whereas (...) I don't know would other like courses have found the same?” (FG13, Current PG Student & UG Alumnus)

Some staff reported positive perceptions of the value of the HP initiative as an entity, yet reported little personal engagement with it due to concurrent workload issues.
“I would be aware of (HP initiative), but you know, sometimes I didn't get involved, because I was just, there was so much happening with work” (IV11, PMSS Senior Management)

8.3.7 Operational Model, Governance, and Funding of Campus HP Activities.

Several participants re-enforced a collective responsibility for the promotion of health and wellbeing across the HEI. However, there were mixed views in terms of the optimal operational and resourcing model for a designated campus HP initiative. One Senior Staff member proposed that localising HP to an office or unit would negate the cross-university approach. However, over-reliance on the inherent sense of responsibility alone was also suggested as a barrier to (i) allocation of formal oversight and responsibility for HP, and (ii) the explicit resourcing of same within the structures of the organisation.

“…It’s that balance between (…) about it's everyone's responsibility, but who drives it, maybe that isn’t it, if we say this is completely shared then we don't have sufficient drivers (…) and it’s getting between that oh that’s someone's job that's not mine (IV12, Executive Management)

Another staff member expressed a sense of disillusionment with the lack of internal clarity and structures in terms of formalised mandates to oversee the promotion of health and wellbeing.

“…it's very hard to clarify. I don't think there is a specific person (with overarching HP responsibility), if there is, please after this tell me who they are, and I will find them and I will liaise with them more” (IV04, PMSS Manager)

Notwithstanding the crucial championing role of influential figures such as lecturers, there was a consensus that a specifically designated, and ideally Executive Level human resource to operationally direct and drive a cohesive campus HP entity was critical.

“…you need a HR driver there as well definitely…it won't happen unless someone is there to drive it, yeah.” (FG08, Senior Management)
“You need a champion, somebody to champion this” (FG07, Senior Management)

“…my view on that is if this is to be something as a university that we want to hang our hat on it doesn't need to be someone that's reasonably senior, it needs to be someone that's very senior. When you have a health promotion office or whatever level that's at, it will be someone that is trying to drive initiatives with different people then it's almost in favour to do different things (…) I think it needs to be someone very senior who has the clout to make decisions and to initiate changes” (FG02, Senior Academic HoD).

The current operational model was deemed unsustainable due to the substantial time constraints upon current Academic Leaders of the campus HP initiative to date.

“...yeah I definitely think that the human resource driver there is so like critical really to the success of this because you know all this organising coordinating and everything like that, (it’s) so time consuming” (FG14, Current PG Student & UG Alumnus)

“I do think yeah it’s really important to have someone whose specific role is to drive this and, as I said, because it's, it's a lot for somebody to be kind of doing on the side it's too much (...) for the impact you want it to have” (FG12, Current PG Student & UG Alumnus)

In terms of funding, both internal and external streams and mechanisms were suggested. Some participants advocated approaching external organisations and/or the Higher Education Authority. In addition, several participants expressed the view that campus HP should fall under the direct remit of the HEI, and therefore funded internally and/or centrally supported via cross-university time buyouts, or centrally administered seed funding. The need for budgetary security and certainty was considered vital to facilitate long-term strategies, as opposed to time limited and operationally constrained approaches.

“…I think there needs to be an investment in this not, as I said, an add-on thing, it has to be a transformative thing, and the only way you're going to do that is to get a budget that you are sure of every year (...) I mean nobody has time (to do) resource cases and fight for budgets every single year, I do it myself and (it’s) soul-destroying you know, because you can never plan, and with an initiative like this, you have to be able to plan going forward” (IV07, PMSS)
Strategically aligning with the fundamental metrics and key performance indicators of the HEI was deemed essential to strengthen the case for internal funding. In this regard, one participant spoke about the need to, “push the buttons” (IV16, Senior Academic, HoD) when making a case for same, cognisant of the internal political and organisational dynamics. It was recommended that nomenclature and key metrics used to make the case for internal funding need to be purposive, with student numbers and retention being an overarching performance indicator to underpin resource cases.

“...then I’ve got to push the buttons that are the right ones I’ve got to speak the language of the accountants in that space and say, well you know, here's what I think the cost will be projected, here is what I think the cost if we lose lots of students will be over the next four years (...) that equally applies in some ways to (campus HP initiative); how do we attract better students, how do we attract more students?” (IV16, Senior Academic, HoD)

8.3.8 Tone and Reach of Health Promotion Messaging

Sub-optimal student engagement was described as a challenge associated with a plethora of activities and events within the HEI. Previous events under the remit of the Students’ Union, such as nutrition workshops and mental health informative activities, were described as being of high-quality, yet poorly attended by the student body.

“I think if we could get more student participation in it like in these type of workshops like I know for myself, even just going to (a previous workshop) like (it really) positively impacted me and kind of made me more in check with my mental health, but like, just like trying to get the students to actually participate in it is hard (...) it's hard to get people to voluntarily, do you know, join these things” (FG15, SU Officer)

It was articulated that not all members of the campus population may be receptive to campus HP messaging, and that there may be a sub-cohort that would view this as invasive and impacting upon personal autonomy.

“I think it's definitely, really important to bring in like health promotion schemes. Not everyone is going to react to them, I don't think. Some people; it could irritate them (...) they're kind of like
‘look, I know what to do, it's my health it’s my body it's my life, I can do what I want’. But I think other people it would really have an effect on them’

(FG11, Current PG Student & UG Alumnus)

In terms of the tone and content of HP messaging, some participants advocated for a salutogenic, rather than a deficit model, with recommendations to ensure to expand beyond mental health, to encompass a broad spectrum of inter-related domains of wellbeing.

“I think we need to decouple health and wellbeing from mental health only, if you know what I mean (...) it's not a deficit model that we should be promoting here” (IV16, Senior Academic, HoD)

8.3.9 Perspectives Regarding Future Needs and Initiatives

As outlined above, many participants emphasised the fundamental importance of sufficient resourcing, and an operational structure that would be accountable to, and supported by, a key and identified Senior Leader with the capacity and authority to facilitate meaningful organisational change.

“…like a committee working with a, let’s say, a Senior Lead on Health Promotion on campus, I think can be useful, but it needs to be clear (there’s) a kind of authority around it in some form or other somewhere in the university, you know? So a little bit of me, suggesting maybe in context of that model that a Steering Committee is (feeding) to a senior role in some form or other, you know?” (FG01, Senior Academic, HoD)

In terms of operational delivery, there were suggestions that simple, attainable initiatives and activities would be most effective, particularly educational activities/events centred around enhancing fundamental life skills.

“I think it’s particularly important as well to teach people how to cook. A lot of people maybe didn't learn or wouldn't know how, and they would have seen a lot of fatty foods being cooked. It's just easier and quicker to (...) make foods that are way less healthy for you”

(FG11, Current PG Student & UG Alumnus)
In terms of the specific nature and design of HP activities, health needs were viewed as complex and likely to differ substantially between individuals. One student proposed the HEI as a conduit facilitating exposure to a suite of health promoting information and supports, as opposed to being overly refined or prescriptive in its approach.

“I think that's one thing that the health initiatives can do is bring variety to people who may not be exposed to it in the home setting so, especially if you're spending, you know, even eight hours a day in that environment that's a third of your day, it can lead to very positive effects even if they take one small snippet in improving their health” (FG14, Current PG Student & UG Alumnus)

“…I would see it as, like, the doorway for people so like that we'd open in college, maybe or universities like open up doorways for each individual then to kind of pursue what they need to have a healthy life (…) if we kept it relatively general in college whilst still kind of opening up like these ideas to students that it (maybe would) allow them then to kind of delve into the area that they need to improve further (…) because people are so different, different things will work for everyone” (FG13, Current PG Student & UG Alumnus)

Both students and staff recommended that a campus HP entity should strongly advocate for recreational walking and/or to prioritise interventions to enable manageable, short bouts of physical activity. Furthermore, some participants outlined that recreational physical activity should be celebrated in addition to competitive sport. In this regard, it was acknowledged that sporting achievements tended to be widely recognised, with relatively little emphasis on health-related activity amongst the general population.

“…maybe a walk. People seem to think that if they want to get physically active, they have to go running or go to the gym or get into some kind of sport or go to a class, and that could be way too high intensity for them. They don't realise that just going for a walk even for 10 minutes, 5 minutes will do them the world of good. It will especially help their mental health as well, so I think just introducing all those initiatives (is) definitely important” (FG11, Current PG Student & UG Alumnus)

“I think your sport is both celebrating the elite person, but it's also facilitating and encouraging participation, and is welcoming the amateur as well (…) and like the hopeless amateur as well (…) and it's recognising the potential of people” (IV13, Executive Management)
Finally, it was suggested that initiatives and activities should continue to be informed by student needs and perspectives. Both students and staff commended the value of a designated research unit within the ‘ideal’ operational model, as an empirical evidence base from which to inform and evaluate activities and progress. However, as one undergraduate student participant stated, failing to implement the findings of the research unit would constitute a substantial opportunity cost to the HEI.

“...there’s no point to, like, researching stuff and, like, getting statistics when you, don’t use it and it just sits there collecting dust. That’s a waste of resources, right?” (FG10, Current UG Student).

Students who had studied health-related modules at undergraduate level suggested that all students should have the opportunity to undertake movement, engage in group based physical activity, and to learn fundamental skills within, rather than as an adjunct to, their programmatic content.

“So I suppose it definitely should be made, like, something to do with a module that it isn’t just that you would do in your kind of spare time, it would be like during class time.” (FG17, Current UG Student & SU Officer)

“… so you know in first year you have the (mandatory HEI-wide induction module), if that were pushed to second semester, maybe, and you had some kind of ‘Get to Know You/Healthy Living’ module kind of in the first semester I think it would be really important, because you do need to catch the students when they're coming in” (FG11, Current PG Student & UG Alumnus)

8.3.10 Reactions to Health-related Challenges Identified in Research

When presented with a schematic of health-related data gathered from across the quantitative phases of this thesis (see Figure 3.1) many participants accepted that the listed health challenges were interwoven within the lived experiences of the campus population, but expressed surprise at the magnitude and prevalence of same. Collectively,
participants acknowledged the gravity of the challenges, and one Executive Management contributor posited that these data substantiated the need for intervention and resourcing.

“It’s not a good dataset, is it?” (IV12, Executive Management)

“Wow, and I’m saying Wow, I wouldn’t have been expecting that high, especially in a university setting” (IV11, Professional Management Support Staff [PMSS], Senior Management)

“I’m amazed at the numbers, I thought you might be dealing with a minority, and that goes back to your question earlier, I mean those figures are figures that would justify any intervention or any kind of application for funding” (IV09, Executive Management)

Participants appeared to be most surprised by the high proportions (>80%) of both students and staff who exhibited a lack of energy and vitality.

“…looking at it (…), it doesn't feel like a happy campus”
(IV16, Senior Academic, Head of Department [HoD])

“I'm astonished at the lack of energy and vitality (…) I just thought that was astonishingly high, those figures are very high” (FG04, Senior Academic HoD)

Interestingly, participants expressed mixed reactions to the overweight/obesity prevalence, whereby some staff could not reconcile this with their own personal observations on campus. One member of Executive Management also questioned the utilisation of BMI as a metric, in the context of broader societal expectations, the complexity of overweight and obesity, and body image pressures placed upon contemporary young adults.

“…I’ve a bit of an issue with that, and I hate really characterisation or categorisation, because I think people start to identify themselves. BMI was invented when people were eating a lot less and I don't think it really suits the modern population. That I think needs to be changed, but you know they say people are overweight potentially maybe from (genetic) reasons and I don't think they should be identifying that, and it becomes a barrier for them engaging in activity then, I think” (IV05, Executive Management)
Otherwise, participants tended to accept and acknowledge the existence of the population health challenges reported, such as sub-optimal sleep duration, low intake of fruit and vegetables, high sedentary time, and a high prevalence of risk-related BMI (mostly attributable to overweight/obesity).

“... I suppose, first of all, none of them surprise me, you know, certainly the risk and the BMI category, the fruit and veg servings” (IV02, Senior Academic, HoD)

“Yeah, I’m not a bit surprised at …no, none of that shocks me.” (FG03, Senior Academic, HoD).

In many cases, participants confirmed and/or identified personally with specific metrics. Further to this, many students and staff outlined that habitual sitting time was likely to be higher than that reported within the metrics, particularly amongst PMSS.

“...excessive sitting time not (surprised), I think anyone working in an office environment, or a student, do you know we do spend an awful lot of time (in a) sedentary position” (IV06, PMSS)

Notably, on self-reflection, some student participants were surprised at their own personal reactions, or lack thereof, to these data. They challenged the relative normalisation of these sub-optimal metrics and behaviours within the culture and psyche of the HEI.

“Can I add something, like the numbers here are like really high - especially the first two categories (low energy/vitality, sub-optimal sleep) and I’m like surprised that I read these numbers and I didn’t react. I was like, yeah …that’s normal, that makes sense, and that’s like strange cause like the more I think about it, I realise that like that shouldn’t be just like normal” (FG10, Current UG Student)

“…these shouldn’t be normal at all” (FG09, Current UG Student)

A number of participants remarked on the intricate links between the respective health challenges, and perceived human behaviours as connected and, in many cases, collectively influenced by the constructs and context of the HEI setting.
“...yeah initially straightaway, I think like, that they're all linked really aren't they?” (IV07, PMSS)

“...they do really relate, like if you kind of look at sleep, if someone was to get sufficient sleep (...), they're more likely to make better food choices, they're going to have their energy, and like then as a result of like better food choices it's quite likely that their BMI will be more likely to be in check” (FG12, Current Postgraduate (PG) Student & UG Alumnus)

Finally, it was proposed that these metrics should not be stratified into a ‘students vs. staff’ model, but rather considered at a macro level as universal health challenges reflective of broader society.

“... these are people issues, they're not student and staff issues, they’re society issues, they are everybody” (IV08, Senior Academic HoD)

### 8.4 Discussion

Given the recently renewed sectoral impetus from the Irish Higher Education Authority (HEA) to deliver upon the settings-based Irish Healthy Campus Framework (IHCF) (Healthy Ireland, 2021b), the current study has endeavoured to investigate student and staff perspectives regarding the rationale for, and operational structures to implement, a health promotion (HP) initiative within a multi-campus HEI in Ireland. The sample comprised of both Senior Management, in addition to a myriad of cross-HEI stakeholders, whose collective participatory ‘buy in’ constitutes a crucial prerequisite to embedding health and wellbeing within the culture and operations of the case HEI (Okanagan Charter, 2015).

The study’s qualitative design encompassed thematic analysis of data gathered from a purposive sample of stakeholders; Executive Management, Senior Management (Heads
of School/Dept.), Professional Management and Support Staff (PMSS), Students’ Union Officers, Postgraduate and Undergraduate Students. Notably, all respective strata appeared to acknowledge and appreciate the rationale for a designated campus HP initiative, which was consistent with participants’ perspectives of health and wellbeing as enablers of both personal and professional development, outlined previously in Study Four (Chapter 7).

Several participants acknowledged the potential of campus HP initiatives to positively impact upon students’ habitual behaviours and health literacy, which aligns with an abundance of Irish and international literature that has posited higher education as a uniquely ‘transitional’ life stage for many young adults (Al-Nakeeb et al., 2015; Gambles et al., 2022; Hill et al., 2020; Murphy et al., 2015). Notably, one undergraduate student explicitly viewed HP as a quasi-fiscal and broader societal investment in current student cohorts, who were “going to be living in (Ireland) for the next 60 odd years” (FG09, Current UG Student). A number of staff participants also perceived campus HP interventions as components of a HEI’s collective and multi-faceted contribution towards societal progression and development. From a societal perspective, enabling health and wellbeing across all stages of the lifespan is one of the core objectives of the Irish Government’s cross-sectoral HP strategic framework (Healthy Ireland, 2021a). The current study largely supports the rationale for HEIs to leverage their unique societal and fiscal agency to advocate for positive health and wellbeing (Okanagan Charter, 2015), sustainability (Karatzoglou, 2013), EDI (Darker et al., 2021), and economic development (Reddy, 2011).
An inextricable link between education and health was noted by both student and staff participants, many of whom explicitly cited the campus HP initiative as an opportunity to integrate health-related education and/or capacity building activities into programmatic curricula. Interestingly, embedding health within cross-disciplinary undergraduate and research curricula was encompassed within one of the earliest seminal HPU frameworks (Tsouros et al., 1998), as a multiplicative strategic approach that would empower HEI alumni who progressed to prominent societal roles to further advocate for positive health and wellbeing. This sentiment also emerged within the current qualitative data, whereby one Senior Staff member hypothesised that the “leaders of tomorrow, and leaders of the future” (IV02, Senior Academic, HoD) were likely to reside amongst the case HEI’s student population.

Both students and staff in the current study perceived that the integration of health and wellbeing within programmatic content could serve to (i) assist students’ transition to higher education, (ii) enhance life skills and resilience, and (iii) facilitate health-promoting behaviours within, rather than extraneous to, habitual daily routines within the HEI. Equally however, several postgraduate student participants who were also undergraduate Alumni of the case HEI, recalled curricular exposure to health and wellbeing that was predominantly circumstantial (through an academic programme within the campus HP initiative’s host academic department, and/or during interactions with lecturers who had a vested interest in health and wellbeing), and/or attributable to their core programmatic outcomes (sport and health-related programmes). This is in line with the findings of recent research that examined the international implementation of the HU approach across 54 HEIs, whereby less frequent foci on embedding health within the
curriculum, relative to skills-based initiatives and/or traditional research activity were noted across the cumulative dataset (Suárez-Reyes et al., 2019).

In an Irish context, Darker et al. (2021) outlined a web-based educational resource (‘Healthy Trinity Online Tool’), which was co-created by students and staff under the remit of a HU-aligned campus HP initiative. This served as a capacity-building digital learning interface tailored to first year students (Darker et al., 2021). In addition, a sectoral call to embed ‘wellbeing’ within higher education curricula was encompassed within a joint report commissioned by the Union of Students in Ireland (USI) and the National Forum for the Enhancement of Teaching and Learning in Higher Education (Byrne & Surdey, 2021). Of note, this report firmly echoed the ethos of the settings-based paradigm to HP, and advocated for (i) a ‘whole-institution’ approach, (ii) the mobilisation of supports to assist HEI staff to upskill as necessary, and (iii) the establishment of a national practice-dissemination network, explicitly aligned to the National Healthy Campus Network (Byrne & Surdey, 2021). Given the well-established synergies between student engagement, success, wellbeing, and HP (Byrne & Surdey, 2021), it would be prudent for the campus HP initiative to strategise a comprehensive review of all facets of the case HEI’s curriculum (undergraduate, postgraduate, staff continuous professional development), encompassing associated teaching and learning (T&L) policies, to systematically identify transdisciplinary pedagogical opportunities to enable positive health, and to leverage the HU as a concurrent policy driver of T&L innovation..

From an ecological perspective, it has been previously established that the impact of the settings approach to HP within a HEI is dependent on attaining an optimal equilibrium between macro-level, Executive commitment to enact health promoting policies (‘top-
down’), and the implementation of visible initiatives and activities to directly engage the campus community (‘bottom-up’) (Dooris et al., 2010). Whilst an ideological ‘buy-in’ to the overarching HU/Healthy Campus ethos was evident within the current data, setting-specific socio-ecological factors appeared to constitute predominant barriers to meaningful engagement with, and dissemination of HP activities. Moreover, this appeared to be further perpetuated by the absence of a designated HP human resource driver within the case HEI (Bickerdike et al., 2018).

Firstly, isolated ‘pockets’ of activity were described by one PMSS member whose remit aligned with health and/or welfare related domains, but these activities were not coordinated at a macro-level in the absence of streamlined HP governance structures. There was also evidence of mixed messaging, whereby several Alumni, most of whom resided within the campus HP initiative’s host Academic Department, incorrectly attributed an annual recreational campus 5km walk that was implemented by another HEI stakeholder solely to the campus HP initiative. Conversely, another Executive Management participant recalled and commended a previous healthy cooking demonstration event that was aligned to the campus HP initiative, but attributed this solely to another campus stakeholder. Given the inherent multi-disciplinary interest in health and wellbeing, in addition to the largely transient and project-oriented funding models within contemporary HEIs, it is unsurprising to note the lack of coherence between HP activities, and the relatively isolationist, ‘siloed’ HP culture within the case HEI, which has also been reported to predominate within both Irish and international HEIs (Darker et al., 2021; Dooris et al., 2020; UCD, 2016).
Within broader discourse pertaining to mental health and wellbeing, the role of HEIs as early-intervention and/or ‘signposting’ settings to direct substantial cohorts of young adults towards appropriate supports has been well established (Hill et al., 2020). In the current study, both students and staff referenced a suite of health and welfare support services that were situated within the case HEI. Further, it was evident that many PMSS members whose remits resided within campus support services adopted quasi-pastoral perspectives of their roles, and were cognisant of the need for timely assessment and intervention. However, it was concerning that both access to, and agency to engage with, campus supports was not equitable amongst all cohorts of the case HEI’s population, which is in direct contrast to the ‘whole-setting’ ethos of the Healthy Campus Framework (Healthy Ireland, 2021b)

Firstly, health and welfare support such as the Medical Centre and Counselling Service were not accessible to staff of the case HEI. Moreover, several staff participants perceived that the case HEI exhibited a psyche of relative disinterest in the health and wellbeing of staff, positing the outsourcing of staff welfare issues to third-party providers as substantiative evidence in this regard. Notably amongst the student population, access to the Medical Centre and Counselling Service was not encompassed within the fees of part-time students, of which there were 7,639 enrolled (47.7% of total enrolments) during the 2018/2019 academic year. Of further concern, an account provided by an UG Student attending a Satellite Campus strongly indicated geographical inequities across the multi-campus HEI, whereby many students were not enabled to engage with campus supports or initiatives, given that these activities were situated solely on the HEI’s Primary (i.e., ‘main’) Campus. Finally, although there was collective agreement that emergency cases were rapidly facilitated, there was some discordance between the accounts of students
and staff within the Primary Campus, who recalled delayed and/or unsuccessful attempts to either directly access (students), or refer students to Medical and/or Counselling Services, and a PMSS Manager who expressed the view that such accounts were not substantiated. Overall, the current data indicate that a comprehensive audit of the case HEI’s referral pathways to its suite of supports is urgently warranted, to identify and inform policies that will serve to ameliorate extant inequities in this regard.

The current data also indicated inequities in terms of the relative ‘reach’ of HP messaging, whereby it appeared there was limited engagement with the campus HP initiative to date beyond the initiative’s host academic department, and/or beyond those Faculty or PMSS who exhibited an expertise or personal interest in health. Otherwise, students and staff described passive familiarity with email and/or miscellaneous communications, which may have been attributable to (i) pervasive workloads, (ii) cultural segregation between academic departments within the case HEI, or indeed (iii) the above-mentioned lack of cohesion and/or streamlining in the messaging and communications of health-related activities and initiatives implemented across the HEI. In contrast, however, Alumni of the initiative’s host department. recalled being explicitly facilitated to attend and engage with events and activities by HP Initiative’s Core Team. Further to this, it appeared that the campus HP initiative had enabled long-term acquisition and retention of health-promoting life skills through previous capacity building events (“we were taught to cook and I actually still make some of the meals, that I was taught there because I remember thinking they were really easy”, FG11, Current PG Student & UG Alumnus). Overall, the current data strongly re-enforced the need to purposively embed the HP initiative within and across all departments and units of the multi-campus HEI, as an immediate strategic priority.
In terms of the optimal ‘tone’ of HP messaging to engage and empower the case HEI’s population, the current study highlighted an overarching orientation towards positivist messaging, which is consistent with the fundamental salutogenic theoretical paradigm that underpins the settings-approach to HP (Dooris et al., 2014; 2017). In this regard, both students and staff advocated against overly prescriptive and/or deficit-based communications. One Senior Academic suggested that the scope of the HP initiative should extend across multiple domains, as opposed to becoming a reactive mechanism through which to address issues such as mental ill health. Interestingly, the current study’s discourse trended towards collective recommendations for a campus HP initiative that would serve as a structural conduit to facilitate exposure to, and/or opportunities to engage with, capacity building activities, health-promoting curricula, and habitually healthy choices.

At a macro level, Senior Management commitment and ‘buy-in’ to the HU agenda has been well-established as a potent enabler of the meaningful implementation of the transformative settings-approach to HP (Dooris et al., 2020; Newton et al., 2016). In the current qualitative data, however, an emergent paradox was evident amongst Senior-Level strata, whereby there was quasi-universal commendation of campus HP activity in a general context, yet no explicit references to the IHCF, or discourse to indicate a tangible awareness of the international HU agenda. These omissions were surprising, given that the IHCF had been disseminated nationally via a government press release prior to the current phase of qualitative data collection (Dept. of Health, 2021). In contrast, both Executive and Senior Management participants explicitly referenced the legislative and regulatory drivers that had underpinned the resourcing of ‘Equality, Diversity and Inclusion’ (EDI) within the case HEI. In contrast, ‘wellbeing’ was posited
as a somewhat extraneous and less immediate agenda, “I could see similarly (to the state-driven progression of EDI), a wellbeing sort of groundswell and a packaging of that but I think that might be for the future” (IV05, Executive Management).

Although merely speculative, the dearth of informed discourse pertaining to the national ‘Healthy Campus’ agenda could be reflective of the traditional societal segregation of the ‘health’ and ‘education’ sectors. Therefore, despite exhibiting an evident pastoral concern for both students and staff, it is possible that Executive Management may have been somewhat culturally conditioned to perceive salutogenic HP as beyond the direct mandate of the HEI, and/or insufficiently aligned with performance metrics to substantiate resource allocation within a highly constrained higher education environment (Chapman & Doris, 2019). One participant discussed how HP was not habitually to the forefront of the Executive’s psyche due to heavy workloads and multiple concurrent tasks, “it’s just day to day (busyness) isn’t it? So many things that we have to think about that you know we deal with exactly what's in front of us” (IV12, Executive Management). Notably consistent with the narratives outlined by both students and staff within Study Four (Chapter 7), this contribution indicated that an overarching pressure to attend to time-constrained tasks, and to manage heavy workloads, also constituted a barrier to health and wellbeing amongst the HEI’s Executive. From an organisational perspective, this relative scarcity of time may have precluded Executive Leadership from considering and/or strategising the implementation of perceptively less urgent and/or arresting agendas such as settings-based HP. Nevertheless, given the consistent calls for HP leadership in the current study, summated by one Senior Academic (FG02, HoD) as a campus HP governance strategy that would be accountable to “…someone very senior who has the clout to make decisions and to initiate changes”, it is evident that the operational
structures of a campus HP initiative within the case HEI should either report to, or visibly align under, the remit of a designated Executive Nominee from the outset.

In addition, several staff (non-Executive) alluded to a sense of ‘lip service’, whereby structures within the HEI were not perceived as conducive to wellbeing, and were viewed as discordant to the contrary rhetoric from Senior and Executive Leadership. Further, although a comprehensive audit of third-party health and welfare support providers was not encompassed within the scope of this study, it was also concerning to note the suggestions of some staff that a culture of ‘outsourcing’ health and wellbeing constituted the HEI’s modus operandi, in preference to internal retrospection upon structural interventions to engage and empower the campus community. This could be attributable to the broader ‘external’ confirmation bias that was postulated to reside within the psyche of the HEI, whereby several Senior Staff suggested that the case HEI placed an inherently greater value on external validation and/or recognition, with a relative under-recognition of internal resources, structures and/or achievements.

From an operational perspective, international literature has indicated that the structures, resourcing, and relative emphasis on the components of the ‘whole-HEI’ approach to HP within HEIs differ substantially between settings. This was evidenced in the work of Suárez-Reyes et al. (2019), whereby four distinct clustered groups were identified in a dataset comprised of 54 HEIs across 25 countries, with each cluster exhibiting contrasting HU implementation characteristics. Although not habitually exposed to the intricate workings of HEI operational structures, it was particularly notable that student participants in the current study also resided amongst the cross-HEI strata calling for a resourced HP driver to alleviate current constraints upon the reach and impact of campus
HP activity, and to reduce the case HEI’s opportunistic reliance upon the goodwill and support of Faculty.

The final objective of this study was to identify any latent drivers and/or internal synergies that could serve to inform and progress the implementation of a HU-aligned campus HP initiative within the case HEI. In this regard, the high intrinsic value placed upon external validation, accreditation and success was particularly evident within the contributions of Senior stakeholders, who perceived an opportunity for the HEI to become known as an exemplar HP model and/or “the best University in Ireland” (IV12, Executive Management) in this domain. Paradoxically however, in the absence of an operational structure, or resourcing model, the sustainability of current HP activities within the case HEI remains uncertain (Bickerdike et al., 2018), and the relatively opportunistic operational structures to date do not align with any of the fundamental requirements outlined within the IHCF (Healthy Ireland, 2021b). Although accreditation is not a formal aspect of the IHCF, the current study also indicated that dissemination and/or validation of activities would constitute a potent latent driver within the culture of the case HEI to engage Senior Management to endorse the HP agenda. Pragmatically, international HU networks and symposia have been perceived as invaluable fora through which to obtain and disseminate outputs, resources, and activity (Dooris et al., 2019). In terms of aligning HU activities with fundamental HEI performance indicators (Spence, 2019), such fora could facilitate international collaborations and peer-reviewed outputs, further adding to the empirical evidence underpinning the HU approach, whilst simultaneously contributing towards the national and global impact of the case HEI within a rankings-driven higher education landscape (Musselin, 2018).
Finally, from a research perspective, the substantial impact of empirical data to serve as an objective ‘call to action’, was substantiated by the reactions of several participants in the current study to a visual synopsis of the health related challenges identified amongst the HEI’s population, “I’m amazed at the numbers, I thought you might be dealing with a minority (...) I mean those figures are figures that would justify any intervention or any kind of application for funding” (IV09, Executive Management). In alignment with the ‘co-leadership’ structure embedded within the governance of a similar HU-aligned HP initiative in an Irish HEI (Darker et al., 2021), the current data suggest that a governance structure comprised of a designated Faculty Lead could prudently leverage the inherent research and innovation ecosystem within the case HEI, to inform and evaluate internal HP activities. Designated research activity may also concurrently serve to contribute towards the case HEI’s research impact metrics, given the current paucity of rigorous evaluation studies examining the impact of the implementation of the settings approach to HP within the global higher education sector (Innstrand & Christensen, 2020; Suárez-Reyes et al., 2019).

8.5 Conclusion

The Okanagan Charter for Health Promoting Universities and Colleges (2015) unequivocally called upon HEIs to adopt a settings-based paradigm to embed health and wellbeing within their core organisational mandates. In the Irish higher education sector, there has also been a more recent impetus to implement the settings-based HP principles outlined within the IHCF (Healthy Ireland, 2021b). In the context of an overarching mixed methods needs assessment to inform a multi-campus HP initiative within a case HEI in Ireland (Bickerdike et al., 2018; 2019; 2022), the current study employed a
qualitative design to explore the perspectives of students and staff regarding campus HP practices. Although a collective cross-HEI appreciation of the rationale for campus HP was apparent, the sustainability and impact of campus HP remains uncertain in the absence of (i) resourced HP leadership, (ii) internal cohesion of HP activity, and (iii) tangible commitment to the Healthy Campus agenda. Given the extant funding constraints within the contemporary HE environment (Chapman & Doris, 2019), strategic, feasible and culturally relevant HU operational resource cases are urgently required to substantiate the viability of HU initiatives, and to secure Executive Management endorsement to mandate and precipitate cross-HEI HP action (Dooris et al., 2020). The current study has endeavoured to guide HP stakeholders within the case HEI, and indeed similar organisational settings, to substantiate and inform ‘macro-level’ discussions pertaining to the rationale for ‘whole-setting’ HP resourcing and structures.
Chapter 9

Discussion, Recommendations for Future Research, and General Conclusions
9.1 Discussion

The overarching aim of this thesis was to inform a health promotion (HP) initiative within a multi-campus Higher Education Institution (HEI) in Ireland. The collective findings serve as a comprehensive HP needs assessment, and have informed a triangulated model of the setting-specific determinants of health and wellbeing within the case HEI (see Chapter 7, Figure 7.1).

As outlined within Chapter 3, a triphasic mixed methods approach was implemented across five distinct empirical studies, sequentially progressing from a quantitative to qualitative paradigm as follows:

i. Phase One centred around quantitative data collection from both students (Study One, Chapter 4) and staff (Study Two, Chapter 5), using two distinct, yet related, web-based health and lifestyle questionnaire instruments (see Table 3.3 and Table 3.4).

ii. Phase Two was comprised of a purposively designed ‘transitional’ mixed-methods study (Study Three, Chapter 6), that aimed to comparatively analyse the above-mentioned quantitative health and lifestyle metrics of both students and staff within the socio-ecological context of the case HEI’s culture and environment.

iii. As the final thread of investigation, Phase Three constituted a solely qualitative phase, designed to explore the lived experiences of students and staff within the case HEI (Study Four, Chapter 7), and to elicit student and staff perspectives regarding current, and future, campus HP practices (Study Five, Chapter 8).
As distinct entities, each of the five empirical studies also endeavoured to address extant disciplinary gaps within Irish and international HP literature. Study One (Chapter 4) and Study Two (Chapter 5) addressed the need for multi-domain quantitative data within the context of an ever-changing higher education (HE) environment, and reported on the collective health and lifestyle behaviours of a cohort of 2,267 HEI students and 279 staff, respectively (Bickerdike et al., 2019; 2022). Study Three (Chapter 6, Manuscript in Preparation) constituted a dual-cohort comparative study, which served to identify health-related domains, and challenges, of relevance to both students and staff within the case HEI setting. Study Four adopted a socio-ecological paradigm to qualitatively examine the determinants of health and wellbeing within the case HEI, and these data further contributed to the derivation of a triangulated HP model that may transfer to similar HEIs and, indeed, cross-sectoral organisations. Finally, Study Five (Chapter 8) elicited the perspectives of cross-HEI stakeholders regarding optimal operational campus HP structures and strategies, and aimed to align the highly theoretical principles of settings-based HP with the culture of, and constraints experienced by, students and staff within the Irish HE landscape.

The findings of each respective study have been discussed in substantial depth across the empirical chapters of this thesis (Bickerdike et al., 2019; 2022). Therefore, this concluding chapter serves to focus primarily on:

i. The most pertinent ‘within-study’ findings that are of maximal macro-level relevance to the overarching purpose of this research, which was to inform the development of an impactful and sustainable campus HP initiative.

ii. The disciplinary impact and/or practical application of these findings, and/or recommendations for further research arising from same.
9.2 Phase One: Baseline Quantitative Phase

The objectives of Study One (Bickerdike et al., 2019, see Chapter 4) were to (i) explore and examine sex differences in the collective health and lifestyle parameters exhibited by students of the case HEI, and (ii) identify significant predictors of students’ positive mental health as indicated by quantitative scores on the 4-item ‘Energy & Vitality Index’ (EVI) (Ware et al., 1993).

As an overarching concern, substantial proportions of students reported risky and/or sub-optimal health-related behaviours on items/scales pertaining to alcohol consumption (54.7% of males and 54.1% of females were classified as hazardous drinkers), habitual cannabis use (17.6% had used cannabis during the 30 days prior to data collection), sexual activity (44% reported that either they, or their partner, had taken the morning after pill), sitting time whilst attending the HEI (65.7% reported at least 4 hours sitting time per day), and sleep (29% reported ‘poor/very poor’ sleep quality during the 30 days prior to data collection, and 79.3% reported a habitual sleep duration of <8 hours during Mon-Fri).

Multiple linear regression (MLR) identified 8 significant predictors of students’ positive mental health, which collectively accounted for 37% of the variance in EVI scores (Bickerdike et al., 2019). Female sex, spending 90 mins or more on social media during weekdays, and perceived (but not calculated) overweight/obesity appeared to negatively predict EVI scores, as evidenced by the negative standardised beta values of these variables within the regression model. Conversely, positive predictors were good/very good general health, daily fruit and vegetable servings (where more servings predicted higher EVI scores), higher scores on the AUDIT-C subscale of hazardous drinking, good/very good mental health, and good/very good sleep quality.
Study Two (Chapter 5) adopted a similar cross-sectional study design, and aimed to (i) investigate the health and wellbeing metrics of a heterogeneous cohort of staff (stratified by sex, age and job category, where appropriate), and (ii) examine for the presence of clustering of health-related metrics, similar to the clustered patterns of behaviours previously identified amongst the general Irish population (Conry et al., 2011).

A Two-Step Cluster Algorithm was conducted, which identified three distinctly clustered groups amongst the sample of staff, based on self-perceived general health and quality of life, smoking status, psychological distress scores (MHI-5), positive mental health scores (EVI), self-reported PA volume (converted where relevant to moderate intensity equivalent per week), drinking behaviours, and habitual fruit and vegetable servings. This cluster analytical procedure identified a clear continuum whereby individuals exhibited either ‘Suboptimal’ (25.6%, n=50), ‘Moderate’ (36.9%, n=72) or ‘Healthy’ (37.4%, n=73) clustered lifestyle patterns (Bickerdike et al., 2022). A series of pertinent ‘between-cluster’ differences were identified, whereby ‘Healthy Lifestyle’ individuals reported significantly lower perceived stress and absenteeism relative to those within the ‘Sub-Optimal Lifestyle’ Cluster. Moreover, those within the ‘Healthy Lifestyle’ Cluster also reported significantly lower BMI values than those within both the ‘Sub-Optimal’ and the ‘Moderate’ lifestyle Clusters.

9.2.1 Phase One: Applications and Recommendations for Future Research

In addition to generating dual-cohort baseline datasets to inform subsequent phases of the broader mixed methods research strategy, several notable practical implications and recommendations for future research can be explicitly derived from Phase One.
Student and Staff Questionnaire Instruments

As comprehensive methodological instruments that have been based on previous Irish and international research (Davoren et al., 2015; Hope et al., 2005; Houghton et al., 2010; Mac Neela et al., 2012), the web-based questionnaires can be replicated, and/or adapted for use within future longitudinal prospective studies or repeated cross-sectional waves of data collection under the remit of the campus HP initiative. This will facilitate longitudinal mapping of the health and lifestyle parameters of students and staff within the case HEI, in addition to comparative analyses relative to the general Irish population (IPSOS MRBI & Dept. of Health, 2021). Such comparisons will serve to determine whether health-related parameters are consistent with broader societal trends, and/or potentially exacerbated to a greater extent by determinants within the higher education sector, or indeed within the case HEI itself.

Further to this, it has been well-accepted that comprehensive and multi-modal evaluation should be encompassed within the HP strategy of Healthy Campus and/or HU initiatives (Darker et al., 2021; Dooris et al., 2019; Healthy Universities, 2022b). The current instruments, and/or a subset of items therein, can be disseminated as part of future strategies to evaluate campus HP activities within the case HEI, serving to quantify the ‘pre-post’ effect of intervention(s) and/or macro-level policy approaches on designated health-related outcomes. This may also serve to substantiate future resource cases for central funding, and/or to sustain University Management endorsement of the campus HP initiative.

Beyond the case HEI, the instruments may also be of interest to Irish, and/or international, HP practitioners and stakeholders seeking to concurrently measure multiple domains of
health and wellbeing amongst HEI student and staff populations. Although several studies have reported on the health and lifestyle parameters of HEI students in Ireland (Davoren et al., 2015; Hope et al., 2005; Mac Neela et al., 2012; Murphy et al., 2015), there has never been a designated sectoral strategy to longitudinally monitor HEI students’ health and wellbeing. This is a notable dearth, given that there were 246,299 students enrolled within Irish HEIs during the 2021/2022 academic year (HEA, n.d.). More recently, the paucity of research pertaining directly to the implementation and evaluation of the ‘Healthy Campus’ approach within Irish HEIs was noted within the Irish Healthy Campus Framework (IHCF) (Healthy Ireland, 2021b), which further re-enforces the need for greater national cohesion and consistency in relation to the quantitative evaluation of the health and lifestyle behaviours of campus populations. Implemented through the medium of the National Healthy Campus Network, a designated research strategy encompassing multi-setting, quantitative data collection using standardised web-based questionnaire instruments (such as those reported within Chapter 4 and Chapter 5 of the current thesis), would enable a more consistent, rigorous, and ultimately valid, evaluation and quantification of the HE sector’s contribution to the Irish Government’s broader HP strategic framework (Healthy Ireland, 2021a). Given the magnitude of the Irish HE sector, the inherent scalability of a national research strategy could also enable multi-setting, high-impact HP publications, similar to recently disseminated outputs from a nationally co-ordinated study of HEI students in Norway (Grasdalsmoen et al., 2020; Sivertsen et al., 2019). Such an approach could serve to visibly align the ‘Healthy Campus’ agenda more explicitly with the thematic research priorities of the HE sector, and hence the “core business” of HEIs (Dooris et al., 2014, p. 14).
Cross-Cutting Research Design Principles

In terms of overarching future study design recommendations, it is well-established that biological sex and gender should be encompassed within health-related research strategies and analytical paradigms, given the intricate association(s) of these constructs with a multitude of risk factors, attitudes and outcomes (Doyal, 2001). In the current research, male students reported more frequent risk-taking behaviours, yet concurrently engaged in more physical activity, exhibited more positive perceptions of overall health, and reported more favourable psychometric indices (Bickerdike et al., 2019). Similarly, amongst staff, whilst exhibiting significantly less favourable health-related metrics, males concurrently reported more positive global self-perceptions (such as marked under-recognition of overweight/obesity), a significantly greater perception of work life balance, more favourable positive mental health scores (EVI instrument), and greater self-efficacy to solve personal problems (Bickerdike et al., 2022).

Overall, these data highlight that socialisation patterns and/or gendered roles should be explored in future research, to investigate the extent to which relative masculinity and/or femininity mediates health-related behaviour, and health literacy, across all strata of the case HEI setting. From an organisational leadership perspective, given that hierarchal behavioural role modelling was identified in Study Four as a potent determinant of health-related behaviour within the case HEI (Chapter 7), it is pertinent to note that significantly greater proportions of male staff in the current sample were older (55+), and reported ‘Management’ (12.8% of all male staff vs. 4.2% of female staff) remits. Whilst speculative, it is possible that health-related misperceptions, and/or socially conditioned traditionalist gendered perspectives, could further mediate the health-related behaviours of highly influential Senior Management strata within the case HEI.
As an additional overarching recommendation, a longitudinal, multi-domain research strategy is warranted under the remit of the campus HP initiative to provide further insight into direction of association(s) between variables, and to establish causality. In addition to sequential waves of self-report data, future research should encompass objective measures such as physiological data, anthropometric indices, and objectively measured physical activity. Comprehensive audits of the HEI’s built environment, in addition to empirical analyses of the volume and nature of presentations to the HEI’s health and welfare supports, would also serve to further strengthen the ecological validity of this research strategy. Finally, all future studies implemented under the remit of the campus HP initiative should endeavour to encompass fundamental educational and/or organisational key performance indicators (KPIs) such as academic stage grades, student attrition data, and staff absenteeism as outcome and/or mediator variables, where relevant and appropriate.

Applications of the Multiple Linear Regression Model (Study One)

Whilst the settings-based approach to HP extends beyond the boundaries of quantitative data to encompass macro-level organisational cultures and operations (Dooris et al., 2014; Newton et al., 2016), several notable inferences can also be drawn from the Multiple Linear Regression (MLR) model in Study One (Chapter 4), which was used to identify significant predictors of students’ positive mental health amongst a collection of variables that were measured via the web-based questionnaire instrument (Bickerdike et al., 2019). MLR is a statistical procedure to examine concurrent associations between a collection of independent variables, and a single numeric outcome (or ‘dependant’) variable (Eberly, 2007). Using an ‘enter method’ that incorporated 16 variables in a preliminary model, a final MLR model was derived which collectively accounted for 37.0% of the variance in
students’ positive mental health, as indicated by EVI scores (Table 4.7). Given the increases in both the volume of students and the complexity of presenting issues to highly constrained HEI mental health supports (Hill et al., 2020), these data have important organisational, fiscal, and sectoral implications, and appear to substantiate the resourcing of preventative lifestyle-related HP interventions as part of overarching strategies and/or policies to reduce the volume of presentations to mental welfare services within HEIs. More specifically, the standardised beta coefficients within the model suggested future campus HP initiatives designed to improve sleep quality, increase fruit and vegetable intake, and reduce students’ habitual social media volume during weekdays (Mon-Fri) could serve to further mediate and improve positive mental health and wellbeing.

Interestingly however, the MLR model also indicated that higher scores on a hazardous drinking subscale were associated with higher EVI scores (and hence more favourable mental health). This finding could reflect the quasi-normalisation of hazardous episodic drinking within Irish society (O’Dwyer et al., 2021), and more specifically, within the normative culture of the higher education experience (Davoren et al., 2016). A systematic review of 65 studies involving HEI students across Europe explicitly reported that social and/or ‘pleasure seeking’ motives were associated with risk-related alcohol consumption (Wicki et al., 2010). Although beyond the scope of Study One, it is possible that the positive relationship between hazardous drinking and EVI scores within the MLR model was attributable to students’ inherent exposure to alcohol as part of social and/or extra-curricular activities, which in turn manifested in more positive mental health due to a perception of greater social belonging. Whilst the case HEI setting does not have a bar situated on Campus, future operational drivers of the Campus HP initiative (see Section 9.6 below) should pro-actively engage with all stakeholders to collaboratively map social
and/or extra-curricular activities under the remit of the case HEI’s Clubs, Societies, and/or Students’ Union. This could serve to identify socio-cultural opportunities to offer ‘alcohol-free’ activities that will continue to enhance social belonging of both students and staff, whilst concurrently enabling all strata of the campus population to engage with an alternative ‘norm’.

Applications of the Cluster Analytical Procedure Amongst Staff (Study Two)

As influential stakeholders in, and potential beneficiaries of, campus HP initiatives, it is surprising to note the relative dearth of literature investigating multiple health-related parameters and/or behaviours amongst diverse HEI staff cohorts. Although some discourse regarding the impact of the COVID-19 pandemic on the mental health of academic staff has been disseminated (Irish Federation of University Teachers, 2021), it appears that Study Two was the first empirical study of its kind in Ireland to investigate the (i) presence of clustering of health related behaviours amongst a cohort of HEI staff, and (ii) association between clustered health and lifestyle metrics and organisational outcomes of interest such as perceived stress scores and self-reported absenteeism due to health problems.

Whilst settings-based HP is rooted in a salutogenic, rather than a pathogenic, paradigm (Dooris et al., 2014; 2017), it has been proposed that the pervasive prevalence of clustered health-risk behaviours across the human lifespan supports the rationale for targeted behavioural interventions within the context of a multi-component HP strategy (Spring et al., 2012). The apparent lifestyle continuum identified in Study Two, whereby HEI staff exhibited either ‘Suboptimal’ (25.6%, n=50), ‘Moderate’ (36.9%, n=72) or ‘Healthy’ (37.4%, n=73) collective lifestyle patterns (Bickerdike et al., 2022), re-enforces the
rationale for broad-based health and lifestyle interventions under the remit of the campus HP initiative, as part of an overarching strategy to concurrently enhance inter-related behaviours, reduce BMI, alleviate stress, and reduce the incidence of health-related absenteeism. From a research perspective, future studies should expand upon the methodological approach adopted in Study Two, combining a cluster analytical procedure with objective cardiometabolic risk assessments, physiological markers of stress, anthropometric data, and objective measures of productivity. Regular replication of the cluster analytical approach within each campus of the multi-campus HEI, at Dept. level, and/or within similar organisational settings, may also serve to ensure future HP interventions can be tailored more specifically to local population needs.

Whilst Study Two identified distinctly clustered groups at the time of cross-sectional data collection, it was not possible to determine the extent to which lifestyle clusters (i) may have evolved over time, and/or (ii) were mediated by broader social determinants, demographic characteristics, individual variations in health-related literacy, and/or psychological resilience amongst the heterogeneous sample of staff. It was interesting to note that there were no significant differences in (i) length of service, or (ii) self-reported weekly working hours between any of the Cluster groups. Moreover, the proportional composition of the staff category classifications used in Study Two (‘Academic’, ‘Management’, ‘Clerical/Support/Other’ [CSO] in Study Two) did not differ significantly between Clusters (p>0.05). It was notable, however, that the absolute proportions of CSO staff decreased along the continuum whereby 51% of Sub-Optimal Cluster was comprised of CSO staff, versus 40.3% of the Moderate Cluster, and 30.6% of the Healthy Cluster. Conversely, the respective proportions of Academic and Management staff appeared to increase along the continuum (Academic staff: 40.8% of Sub-Optimal Cluster vs. 52.8%
of the Moderate Cluster, and 56.9% of the Healthy Cluster; Management staff: 8.2% vs. 6.9% vs. 12.5%). As an interpretive consideration, sectoral nomenclature has evolved and emerged in recent years, and, therefore, roles that constituted the CSO category in Study Two have been described using the nationally standardised term of Professional, Management and Support Staff [PMSS] in both Study Four [Chapter 7] and Study Five [Chapter 8]). Pragmatically, CSO staff (and/or PMSS) constitute an accessible target population for initiatives and interventions under the remit of the campus HP initiative. In this regard, the ‘calendar-year’ working model, in addition to the clerical nature of many PMSS roles, serve as opportunities to employ a macro-level strategy, mandated by the case HEI’s Human Resources Department, to embed multi-component HP interventions within the habitual working day.

**Student and Staff ‘Special Interest’ Working Groups**

From a campus HP practice perspective, it is evident that either a thematic working group and/or ‘Special Interest Group’ (SIG) to address students’ risk-related patterns is also warranted within the operational structures of the campus HP initiative (as proposed in Section 9.6 below). In alignment with a ‘systems-based’ approach and paradigm to leverage inter-agency HP partnerships (Joyce et al., 2018), this SIG could facilitate collaborative policy development and intervention design, engaging with internal stakeholders and aligned community agencies whose remit extends to sexual health, illicit drug use, alcohol consumption, and the intricately associated domain of sexual consent. The SIG should endeavour to further investigate the determinants of risk behaviours to facilitate the design of culturally relevant, sex- and gender-specific interventions and approaches.
Secondly, findings from Study Two substantiate a distinct socio-economic and public-health rationale for a similar SIG pertaining to staff, who are comparatively under-represented in international HP literature (Bickerdike et al., 2022). Current findings suggest preliminary foci of the staff SIG should extend to investigating and reducing cardiometabolic and NCD risk factors, enhancing health-related components of fitness, reducing sedentary time (particularly amongst clerical staff), and, from an organisational productivity perspective, addressing the high prevalence of somatic symptoms experienced by staff during the 12 months prior to data collection, such as low back pain (24.1%), anxiety (18.7%), severe headache (15.3%), and depression (6%).

**Digital Technologies and Campus HP Practice**

Whilst not evaluated amongst staff, it was pertinent to note the pervasive use of social media (SM) reported by students in Study One, whereby only 3.6% did not have a SM account of any kind (Bickerdike et al., 2019). Moreover, SM appeared to constitute a mechanism through which alcohol-related norms were permeated between peer groups, whereby 44.0% of those who had shared images to SM during the 30 days prior to data collection reported that these images portrayed consumption of alcohol. In a broader context, SM has been cited as an increasingly prominent ‘virtual’ HP educational setting (Stellefson et al., 2020), and a digital HP conduit through which to engage HEI student cohorts (Vaterlaus et al., 2015). SM interventions have been reported to positively influence dietary behaviours, physical activity, and body composition (Goodyear et al., 2021). Within the case HEI, however, the absence of a designated HP human resource (Bickerdike et al., 2018) has precluded the development of SM channels and/or the development of a website through which to disseminate and promote campus HP activity, and/or to investigate the feasibility of SM interventions.
From a mental health perspective, however, the MLR model in Study One indicated that spending more than 90 minutes per day on SM during weekdays was a negative predictor of students’ EVI scores ($p=0.01$, standardised $\beta=-0.06$). Whilst the underlying constructs of this apparently negative relationship between high SM use and wellbeing were beyond the scope of Study One, further research is warranted to examine (i) the volume, and (ii) habitual patterns of both SM and smart device use amongst both students and staff in greater detail, to explore their respective association(s) with psychological indices, physiological health markers (such as body composition), and associated health-related behaviours (sleep, PA, diet and sedentary time). Such data could serve a dual purpose, simultaneously facilitating a more comprehensive evaluation of the association(s) between digital technologies and SM with health-related outcomes, whilst also informing the design of a ‘digital’ strand of the campus HP initiative, through which to enhance scalability and reach.

Although Study One examined students’ use of SM, the broader evolution of e-health, and artificially intelligent responsive conversational interfaces, such as ‘Chatbots’ (Potts et al., 2021), has proffered a suite of further technological solutions that could upscale the delivery of ‘traditional’ campus HP activity. Embedding such technologies within the case HEI’s web-based platforms and/or online learning management systems could reduce a proportion of the burden on support services by harnessing these technologies to create rapid and digitised assessment-intervention pathways under the future remit of the campus HP initiative. Finally, greater use of digital devices, web-based apps and/or user interfaces could also be applied within future longitudinal research to elicit the ‘high-risk’ timepoints during which deleterious health-related parameters manifest within the inherently cyclical nature of a semesterised academic model.
Body Habitus

As a complex and multi-factorial public health issue (Aranceta et al., 2009), the Irish government’s commitment to addressing the prevalence of overweight and obesity was re-enforced within the National Obesity Policy and Action Plan 2016-2025, which endorsed a cross-sectoral approach to empower and enable citizens to maintain a healthy body composition at all stages of the lifespan (Dept. of Health, 2016b). In this regard, HEIs are particularly amenable settings within which to implement interventions and policies to ameliorate obesogenic factors within the campus culture and environment.

The distinct public-health rationale for the use of self-reported Body Mass Index (BMI) as a non-invasive population indicator of body habitus has been noted in previous Irish research, whereby analyses of the 2007 ‘SLÁN’ national dataset (n=9,725 self-reported BMI values) revealed that a 1 kg/m² unit decrease in BMI was associated with a 4% reduction in chronic disease burden per 1000 population (including a 10.7% and 11.7% reduction in hypertension amongst males and females, respectively) (Kearns et al., 2014).

In the current research (both Study One and Study Two), comparative analyses of self-perceived body habitus relative to calculated BMI categories (based on self-reported height and body mass), revealed (i) a generalised under-recognition of obesity, and (ii) notable sex-specific discrepancies across the remaining BMI categories. Furthermore, as a student-specific finding; self-perceived, but not calculated, overweight/obesity was associated with lower EVI scores (and hence less favourable mental health).

In Study One (students), it was worrying to note that both sexes underestimated obesity (males: 1.8% perceived vs. 10.7% calculated prevalence, females: 4.0% vs. 11.3%). However, for all other BMI categories, divergent sex-specific discrepancies emerged, whereby female students appeared to over-estimate their body size (overweight: 30.7%
perceived vs. 23.0% calculated, underweight: 1.6% vs. 4.2%). Conversely, male students appeared to relatively under-estimate their body size (underweight: 6.9% perceived vs. 2.4% calculated, normal weight: 68.9% vs. 55.5%, and overweight: 22.4% vs. 31.4%). Given the smaller sample size in Study Two (staff), both self-perceived and calculated BMI categories were dichotomised into ‘underweight/normal weight’ vs. ‘overweight/obese’. Particularly pronounced discrepancies were observed amongst male staff, whereby the perceived prevalence of overweight/obesity was 39.2%, but the calculated prevalence based on self-report data was 64.4%.

From a public health perspective, under-recognition of obesity constitutes a fundamental diagnostic barrier, precludes engagement with the requisite multi-component interventions, and delays assessment of an individual’s relative risk of a plethora of associated cardio-metabolic complications (Pantalone et al., 2017). Notable under-reporting of overweight and obesity has been reported amongst the general Irish population (Shiely et al., 2009), and can emerge in childhood, as evidenced by cross sectional analyses of data from 8,568 9-year-old participants in the ‘Growing up in Ireland’ study, whereby 76% of children who were ‘overweight’ self-identified as ‘normal weight’ (Shiely et al., 2017).

Overall, findings across Study One and Study Two substantiate the need for further research and intervention under the remit of the campus HP initiative to (i) reduce the prevalence of, and (ii) increase the capacity of the population to recognise, overweight and obesity. In this regard, future studies should encompass a comprehensive audit of the case HEI’s food environment to inform targeted ecological interventions to optimise the body composition of both students and staff. Educational initiatives to increase the
campus population’s capacity to recognise overweight/obesity, in addition to its health-related complications, should also be incorporated within the thematic priorities of the campus HP initiative (as outlined further in Figure 9.1). Such interventions should be sex-specific, given the discrepant self-classification patterns exhibited by males and females. Finally, studies that incorporate objective measurement of BMI amongst proportionally representative samples of both students and staff are urgently warranted, to facilitate further analyses of the level of agreement between (i) self-report vs. objective BMI, in addition to (ii) perceived body habitus vs. calculated BMI (both self-report and objective). Where possible, these studies should adopt a longitudinal design to evaluate changes to BMI, and further investigation into students’ anthropometric indices during (i) the initial transition to higher education, (ii) across all stages of academic programmes, and (iii) following graduation from the case HEI, which would serve as useful data for both public health and higher education policy makers.

9.3 Phase Two: ‘Transitional’ Phase

Within the overarching thread of investigation, Phase Two constituted a crucial transitional and ‘bridging’ mixed-methods empirical study (Study Three, Chapter 6), that served to guide the design of the final qualitative phase of this thesis (Study Four/Chapter 7, and Study Five/Chapter 8, see Section 9.4 below), in addition to informing operational principles and recommendations for the campus HP initiative.

The study’s mixed methodology encompassed quantitative comparisons of a series of items that were common to both the student and staff web-based questionnaire instruments disseminated in Phase One. In addition, qualitative components encompassed
(i) a desk review of pertinent documentation relevant to the implementation of a campus HP initiative within the case HEI, (ii) a review of HEI records to indicate the cumulative PA provision within the HEI, and (iii) thematic analyses of qualitative contributions, which were shared via the ‘free-text’ optional item that presented within the last section of both the student and staff web-based questionnaire instruments.

Although the findings of Study Three have been discussed in detail in Chapter 6; in brief, the desk review did not yield any overarching HP strategy or policy, and re-enforced the absence of a designated HP human resource driver that had been noted within previous work (Bickerdike et al., 2018). Moreover, relative ‘centralisation’ was evident within the geographical and operational structures of the multi-campus case HEI, whereby administrative, support, and welfare services were situated primarily within the main campus (referred to as the ‘Primary Central Campus [PCC] within Chapter 6). In turn, the PCC was located between 4 and 48km from the HEI’s respective Satellite Campuses (see Figure 6.1).

The purposive inclusion of common items within both the student and staff questionnaire instruments enabled the derivation of two quantitative indices within Study Three that facilitated meaningful student/staff comparisons, in addition to ‘within-cohort’ comparisons by sex and campus (‘Primary Central Campus’ or ‘Satellite Campus/Other’). Firstly, a subset of ten common health-related variables were each dichotomised as either a ‘risk’ (1), or ‘non-risk’ (0), to enable cumulative calculation of a ‘health risk index’ (HRI) score (possible HRI range 0-10, with higher scores representing higher risk). Secondly, to facilitate an all-encompassing analysis of student/staff perceptions of their own health, a ‘health perceptions index’ (HPI) was derived based on three items
encompassed within both instruments, whereby students and staff rated their (i) general health, (ii) mental health, and (iii) recent sleep quality on five-point Likert scales ranging from ‘very poor’ (1) to ‘very good’ (5).

Notably, analyses of the ten selected health ‘risk’ variables revealed that the five most prevalent ‘risks’ reported were common to both students and staff, and were also uniquely observed in an identical sequential order. More than 80% of both students and staff did not reach the ‘positive mental health’ threshold on the basis of calculated EVI scores (83.7% students, 83.0% staff). This was followed in both cohorts by insufficient sleep duration (79.3% of students, 82.2% of staff < 8 hours per night during the ‘working’ week), sub-optimal fruit and vegetable intake (74.9% students, 62.1% staff < 5 daily servings), excessive sitting time during a typical college or work day (65.7% of students, 60.8% staff, 4 hours or more), and a risk-related (either underweight, overweight or obese) BMI category (41.6% of students, 49.4% of staff).

Utilised as quasi-comparative indices across the distinct student and staff datasets, the mean cumulative Health Risk Index (HRI) score within the student dataset was higher than that within the staff dataset (4.83 vs. 4.04), which was consistent with the overarching pattern of behavioural risk exhibited by students that was discussed in Study One (Bickerdike et al., 2019; Chapter 4). Conversely, the mean Health Perceptions Index (HPI) score was higher within the staff dataset (12.19 vs. 10.91), indicative of more favourable health perceptions amongst staff relative to students based on the three HPI component items (general health, mental health, recent sleep quality).
9.3.1 Phase Two: Applications and Recommendations for Future Research

Whilst refined to a single empirical study (Study Three, Chapter 6), there are several notable strategic priorities and guiding principles for future research and interventions that can be derived from Phase Two. Firstly, it was striking to note the similarities observed in the five most prevalent health ‘risks’ reported by both students and staff, despite the marked demographic heterogeneity between both cohorts. Whilst common items were used within both the student and staff instruments, and the study designs were similar, these data were reported entirely independently. Overall, the marked similarity was suggestive of a ‘mutual exposure’ to socio-ecological constructs within the culture, environment, and/or operational model of the case HEI, to which both cohorts were habitually exposed.

In terms of direct methodological applications, this ‘mutual exposure’ hypothesis served to inform the qualitative paradigm, and overarching design, of the final phase of this thesis (see Section 9.4 below). In this regard, findings from Study Three were applied to guide the indicative structures of both the interviews (IVs) and focus groups (FGs). Study Three also informed the design of a visual data schematic (Figure 3.1) that prompted discussions during IVs/FGs in relation to the (i) ecological validity of quantitative data relative to participants’ lived experiences (Study Four, Chapter 7), and (ii) use of these data as an ‘impact’ metric for the purposes of securing resourcing and endorsement of a campus HP initiative (Study Five, Chapter 8). Finally, Study Three also served to inform the deductive thematic analysis approach applied within Study Four (Chapter 7), which was purposively employed to further investigate the ecological constructs that may have mediated the universally prevalent health-related challenges outlined above.
Moreover, given the prevalence of overweight/obesity, and the sub-optimal fruit and vegetable intake reported by both students and staff, Study Three firmly substantiated the rationale for future research under the remit of the campus HP initiative to conduct comprehensive audits of both (i) the food environment, and (ii) PA provision across all campuses of the case HEI. Interestingly, the findings from this study revealed mixed typologies in terms of participants’ interactions with the campus food environment; whereby 26.9% of both student and staff respondents to the relevant questionnaire item reported a weekly spend of between €5-10 (students), or less than €5 per week (staff). Concurrently, almost one in five students/staff reported a weekly spend of at least €20 (17.7% of students and 20.4% of staff, respectively). A multi-campus, validated audit is urgently warranted in this regard to objectively evaluate the healthfulness of the food environment. Moreover, future studies should investigate the determinants of student and staff purchasing behaviours within campus food and beverage outlets and, crucially, the longitudinal patterns in purchasing behaviours over the course of an academic semester. Such data would serve to identify (i) the specific sub-components of the food environment, (ii) purchasing behaviours therein, and/or (iii) the specific timepoints during the academic year that are most associated with sub-optimal dietary choices (such as examination sittings for students, and subsequent examination correction periods for staff).

Furthermore, whilst derived as macro-level facilitators of quantitative comparisons between two distinct datasets, the ‘Health Risk Index’ (HRI) and ‘Health Perceptions Index’ (HPI) could be utilised in future studies to examine the co-occurrence of health risks amongst sub-strata of the case HEI’s population. Future research should aim to validate these indices using objective measures, and should endeavour to incorporate
mathematical weightings to the individual index components, as opposed to assuming binary nature of risks. From a pragmatic perspective, considering the time and resource constraints experienced within the case HEI (as described in both Study Four and Study Five), these indices could also be used as brief and easily replicable (i) screening and/or (ii) intervention evaluation indicators within the context of a more comprehensive research and/or campus HP evaluation strategy.

Finally, from a mental health and wellbeing perspective, Study Three also identified the need for urgent investigation and monitoring of the psychometric indices of both students and staff. It was pertinent to note the discordance whereby students appeared to exhibit greater levels of psychological distress/negative mental health (40.2% vs. 15.4%), yet both cohorts reported comparably low levels of energy/vitality (83.7% vs. 83.0%). Whilst speculative, it is likely that such pervasively poor wellbeing was also intricately linked to the universally sub-optimal sleep patterns identified, in addition to the substantial sectoral and organisational-level stressors described by both students and staff within Study Four (Chapter 7, see section 9.5 below). Overall, investigating sleep patterns and circadian rhythms should serve as an overarching research and thematic priority across all future activities of the campus HP initiative.

9.4 Phase Three: Qualitative Phase

The two distinct Chapter-based studies that constituted Phase Three (Study Four, Chapter 7 and Study Five, Chapter 8) reported on findings from a qualitative data corpus gathered from 16 individual semi-structured interviews, 4 focus groups, and 2 dyadic interviews; all of which adhered to indicative structural guides that were tailored to the specific
research objectives of this thesis (Table 3.6 and Table 3.7, respectively). Data were analysed using a sequential inductive-deductive approach, whereby preliminary themes derived from inductive coding of the entire data corpus were subject to a divergent subsequent deductive process, from which Study Four and Study Five were derived (see Figure 3.3).

Although described in depth within Chapter 7, the deductive approach employed in Study Four was aligned with Dahlgren and Whitehead’s (1991, 2021) seminal model of the determinants of health. Four primary themes emerged, each of which represented an ecological ‘level’ at which determinants of health and wellbeing were described by students and staff, as follows:

i. At an individual level (Theme 1: ‘Personal paradigms and perspectives’), both students and staff appeared to exhibit holistic perceptions of health as a valuable and functional resource, which was indicative of collective ideological alignment with the World Health Organisation (WHO) definition of health as, “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948, p. 1).

ii. Interpersonally (Theme 2: ‘People and relationships within the HEI’), both students and staff described the importance of positive relationships and social networks within the case HEI as facilitators of positive health. Hierarchal behavioural role-modelling was also widely posited as a potent HP modality. All staff exhibited highly vocational perspectives of their roles, and management described habitual exposure to emotionally challenging, health related scenarios, in addition to the regular, yet unappreciated, provision of pastoral care to both students and staff.
iii. In terms of the HEI’s built environment (Theme 3: ‘Experiences and perceptions of the built environment’), students and staff perceived a lack of agency to habitually engage with the physical activity facilities on campus, and a dearth of healthy options within the food environment. Moreover, several staff remarked on the lack of a privacy space and/or suitable locations for the purposes of emotional self-regulation on campus.

iv. From an organisational and sectoral perspective (Theme 4: ‘Organisational and sectoral determinants’), multiple barriers to positive health were perceived, such as excessively demanding workloads, increased bureaucracy, and pervasive stress within a highly pressurised contemporary HE sector; all within the context of a time-constrained, semesterised model of academic delivery.

In Study Five, deductive analyses, aligned directly to the theoretical principles of the settings-based ‘Healthy University’ (HU)/Healthy Campus approach (Dooris et al., 2010), were conducted on data pertaining to HP practice. This yielded ten distinct themes regarding campus HP practices within the case HEI (see Chapter 8), which further informed discourse pertaining to optimal operational structures through which to implement and sustain impactful HP activities.

Overall, these data re-enforced a strong support for campus HP, and many participants perceived opportunities to align with the educational mandate of HEIs to purposively embed health within curricula, and to facilitate capacity-building amongst both students and staff. However, some staff perceived that the HEI exhibited relative ‘lip-service’ to HP, evidenced by the outsourcing of staff-related issues to external third-party providers. Although a breadth of student supports were referenced, access to such supports was not
perceived as equitable across all strata of the HEI, for example, staff and part-time students could not access the Counselling Service and/or Medical Centre. Logistical barriers were also experienced by students situated on Satellite Campuses, given that supports and resources were largely centralised to the HEI’s main campus. Finally, the campus HP operational model to date, largely reliant upon the goodwill of Faculty, was deemed sub-optimal, and there were consistent perceptions of a need for a designated HP ‘Driver’, and formal Executive Management commitment to substantiate rhetoric with resourcing. At Executive level, a paradox was noted whereby there was an appreciation for the importance of health and wellbeing, yet little evidence of a tangible awareness of the obligations on the HEI to implement the principles of the Irish Healthy Campus Framework (Healthy Ireland, 2021b).

9.4.1 Phase Three: Applications and Recommendations for Future Research

Although specific recommendations arising from both Study Four and Study Five have been discussed within Chapters 7 and 8, respectively, a suite of collective practical applications and recommendations can be derived at a macro level from Phase Three. Firstly, this phase has informed two distinct practitioner-focussed outputs; a data-driven triangulated schematic model of the determinants of health and wellbeing under the remit of the case HEI (section 9.5), and a series of operational principles to facilitate the case HEI’s progression towards implementing the recommended actions outlined within the Irish Healthy Campus Framework (IHCF) (section 9.6). These outputs will serve to directly inform future HP practice within the case HEI, and may also transfer to similar HEIs and organisational settings.
Overall, qualitative data in Phase Three were strongly indicative of (i) consistent ideological support for HP practice across all strata of the HEI, (ii) a collective appreciation for the value of holism, and (iii) a predominantly positivist orientation amongst both students and staff, as opposed to a deficit-based perspective of health. Concurrently, however, it appeared that substantial structural barriers and stressors were intrinsically ingrained within the fundamental processes and operations of the case HEI that precluded health-promoting behaviour and constituted a barrier to both physiological and psychological health. In line with the sociological concept of “structure” versus “agency” referenced within Dooris and colleagues’ (2014) theoretical analysis of the concept of the ‘Healthy University’ (Dooris et al., 2014, p. 12), it appeared that participants within the current qualitative phase of research perceived an overarching lack of agency to undertake health promoting behaviours within the organisational structure of the multi-campus case HEI. These findings indicate that future HP research and interventions should endeavour to focus both on capacity building (education, self-efficacy) and structural empowerment (through macro-level, policy-based approaches) to ensure that campus populations are both equipped, and enabled, to engage in habitually healthy behaviours.

Secondly, as proposed within both Study Four (Chapter 7) and Study Five (Chapter 8), qualitative data were strongly indicative of the need for a comprehensive mapping exercise to (i) identify and engage with all health-related (and aligned) stakeholders within the case HEI, and (ii) establish the full breadth of current health-related activities and initiatives embedded within the ecosystem of the multi-campus HEI setting. Partnership and collaboration with current stakeholders will constitute an essential prerequisite to the sustainable embedding of the campus HP initiative across all operational
activities, as recommended within the Okanagan Charter (2015). The optimal ‘positioning’ of the initiative will require an intricate balance between (i) explicitly resourced, senior-level ‘drivers’ of the entity, and (ii) cross-HEI cultural buy-in to the initiative’s ethos and strategy.

9.5 Practical Applications of the Triangulated Determinants of Health Model

Given its emergence from data that were gathered and analysed within the five empirical studies comprised within this thesis, the triangulated model of the determinants of health and wellbeing, as proposed in Study Four (Chapter 7, see Figure 7.1), could be used both to identify pertinent stakeholders, and to inform a standardised empirical mapping instrument to capture the breadth of current activities across the complex HEI. This would facilitate a cohesive streamlining of the currently isolationist health-related activities and initiatives implemented within the case HEI (Study Five).

The model (depicted in Figure 7.1) aims to conceptualise the complex, and inter-related, domains and determinants of health within the culture of the case HEI. Informed by both quantitative and qualitative data, this model visually depicts the bidirectional associations between the socio-demographic characteristics and contexts of the campus population, and their exposure to the constructs within the HEI setting, namely:

i. Cohort-specific contexts such as financial stressors and ‘coming-of-age’ risk taking behaviours (students), in addition to heavy workloads, ageing, and the solitary nature of many roles within the HEI (staff)

ii. Interpersonal connections, relationship networks, and behavioural role-modelling
iii. The case HEI’s environment

iv. Pervasive cultural and sectoral stressors

The central tenet of the model postulates that exposure to the above constructs further mediates a suite of inter-related health parameters and behaviours (depicted throughout the model using bidirectional arrows) such as mental wellbeing, physical activity, sedentary behaviours, nutritional choices, BMI, body habitus perceptions, and sleep patterns. Collectively, all determinants are posited to mediate ‘health’ (as described by participants within Study Four), which is depicted within the schematic as a valuable, yet somewhat intangible, holistic and positivist asset, intrinsically linked with happiness and quality of life.

As an output, this model may serve as a pragmatic implementation guidance resource for HP practitioners, in addition to the plethora of campus stakeholders whose remits align with health and wellbeing within the multi-campus case HEI. Notably, as outlined within section 9.6 below, the model has also been applied within this concluding chapter to substantiate the rationale for the inclusion of each listed stakeholder within the proposed Campus HP Steering Committee (Table 9.1), and to derive the indicative thematic working group structures depicted in Figure 9.1 below. In this regard, the model indicates that stress, social relationships, behavioural role modelling, and the built environment should be overarching considerations embedded within, and across, the Terms of Reference (TOR) of all future committees and/or working groups established under the remit of the campus HP initiative. Moreover, activities pertaining to ‘Mental Health’, ‘Physical Activity’, and ‘Nutrition/BMI’ should fall under the remit of designated working groups, in addition to two cohort-specific ‘Special Interest Group’ structures,
given the cohort-specific determinants identified across all sequential phases of this research.

From an interventionist perspective, the model also depicted four thematic ecological ‘levels’ of potential HP influence within the scope of the case HEI as follows:

i. Level 1: Individual behaviours and/or health-related domains

ii. Level 2: Environment

iii. Level 3: Inter-personal interactions across the HEI and the resultant ‘role-modelling effect’

iv. Level 4: Macro-level operational and sectoral structures mediating habitual workloads and exposure to stress.

In terms of the practical applications, it is possible that the ‘Levels’ construct could be used as a quasi-indicator and monitor of the ‘ecological reach’ of HP activities, whereby an activity is assigned a cumulative score comprised of all Levels at which that activity resides. Moreover, once mapped, current aligned activities residing at behavioural and/or individual-level domains (Level 1) could be supported at a macro level with aligned built environment (Level 2), role modelling (Level 3) and overarching policy HP interventions (Level 4) under the remit of a macro level campus HP strategy.

Whilst the settings approach to HP cannot be metricised, this model has the potential to address the extant need for a quantifiable and/or tangible assessment system through which to map, design, and evaluate HP activities within the contemporary, largely performance driven HE sectoral landscape (Darker et al., 2021), and indeed within
similar organisational or corporate settings. Whilst further research will be required to ascertain the validity and feasibility of this approach, the proposed model could serve to provide a preliminary indicator as to the likely ‘whole-setting’ impact of a HP activity. At a sectoral level, if such an evaluative ecological approach were adopted nationally, it could assist practitioners and policy makers to identify HP needs with greater specificity, and serve as a standardised evaluation metric, both within, and across, HEIs.

9.6 Proposed Campus HP Operational Principles

The overarching aim of this thesis was to empirically inform the strategic development of a campus HP initiative, aligned with the settings-based approach to HP (Dooris et al., 2014), but more explicitly with the IHCF (Healthy Ireland 2021b). Therefore, the final proposed series of recommendations comprised within this concluding chapter intend to link data with practicum, and scaffold the development of a feasible and setting-specific campus HP operational structure that is:

i. Ecologically valid with respect to the extant culture and environment of the case HEI

ii. In alignment with the established health needs of the case HEI’s multi-campus population, as outlined within Studies One to Three (Chapters 4-6)

iii. Cognisant of the setting-specific determinants of health, as identified in Study Four (Chapter 7)

iv. Informed by the qualitative perspectives pertaining to optimal campus HP practices, as shared by both students and staff in Study Five (Chapter 8)
To date, campus HP activities have been strategised and implemented as a voluntary adjunctive task to complement the research process described in this thesis (Bickerdike et al., 2018). In practice, therefore, this preliminary operational campus HP structure has been somewhat academically weighted. Notwithstanding the HEI’s duty of care to advocate for positive health and wellbeing (Okanagan Charter, 2015), a setting-specific, operational model and formalised HP structure is urgently warranted to demonstrate compliance with the IHCF. For cultural consistency with respect to this national Healthy Campus agenda, the recommended operational structures outlined below have therefore been aligned to the existing thematic action phases and nomenclature comprised within the IHCF (Healthy Ireland, 2021b). Where relevant, guidance has also been derived from relevant international best-practice, and peer reviewed literature pertaining to the HU approach (Dooris et al., 2010; Newton et al., 2016; Suárez-Reyes & Van den Broucke, 2016), in addition to campus HP strategies that have been implemented within Irish HEIs (Darker et al., 2021; UCD, 2016; UL, 2019).

The IHCF, and its accompanying Charter, were co-created by a network of national HEI stakeholders, the Department of Health, and the Health Service Executive (Healthy Ireland, 2021b). Signing of the Charter is intended as the preliminary action to underscore each HEI’s formal commitment to implement the key thematic principles and actions outlined within the Framework. At its core, the Framework calls for HEIs to employ a ‘whole campus’ perspective towards embedding health and wellbeing across (i) strategic and governance operations, (ii) their campus environments, (iii) cultural context and engagement, and (iv) activities to enhance and enable the “personal and professional development” of diverse campus populations (Healthy Ireland, 2021b, p. 3).
Further, the IHCF also outlines a series of cyclical action phases through which components of each HEI’s specific campus HP action plan could be enacted and sustained (see Figure 2.3). These sequential phases are:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. ‘Commit’</td>
<td>An initial commitment to the ‘Healthy Campus’ agenda through explicit signing of the accompanying Charter</td>
</tr>
<tr>
<td>ii. ‘Co-Ordinate’</td>
<td>Co-ordination of activities through designated human resource personnel and steerage structures</td>
</tr>
<tr>
<td>iii. ‘Consult’</td>
<td>Comprehensive consultation with stakeholders to elicit needs and priorities</td>
</tr>
<tr>
<td>iv. ‘Create’</td>
<td>Implementation of tailored and purposive strategies</td>
</tr>
<tr>
<td>v. ‘Celebrate &amp; Continue’</td>
<td>Evaluation, planning of continued activities and re-entry into the implementation cycle at phase (ii)</td>
</tr>
</tbody>
</table>

(Healthy Ireland, 2021b).

It is evident from the primary and secondary research reported within this thesis that an optimal equilibrium between HEI-specific needs and settings-based HP theory should inform the HP actions that are undertaken across each of the above-mentioned phases of the IHCF implementation cycle. In this regard, a series of setting-specific actions are proposed below through which to implement the IHCF implementation phases, specifically within the case HEI. Overall, a six-phase approach is proposed, as outlined in section 9.6 below, which comprises of the five implementation cycle phases of the IHCF (illustrated below in Figure 9.1), in addition to a bespoke, setting-specific ‘priming’ phase (‘Phase 0’) at the very outset. The purpose of this ‘priming phase’ is to facilitate
the internal dissemination of the five empirical studies that have comprised this thesis in its entirety, as an urgent pre-requisite to securing, and sustaining Senior Management commitment to campus HP.
Figure 9.1 Proposed campus HP operational structures within the case HEI, as informed by the IHCF (Healthy Ireland, 2021b). #TOR=Terms of reference SIG=Special Interest Group, SC=Satellite Campus, KPIs=Key Performance Indicators
9.6.1 Phase 0: Priming for Action, and Engaging Executive Management

“This is simply something (that) we are ethically and morally bound to take on board”

(IV16, HoD)

Senior Management commitment and ‘buy-in’ to the HU agenda has been well-established as a potent enabler of the meaningful implementation of the transformative settings-approach to HP (Darker et al., 2021; Dooris et al., 2020; Newton et al., 2016). Study Five (Chapter 8) highlighted a paradox amongst Senior Level staff strata, whereby there was quasi-universal commendation of campus HP activity in a general context, yet no explicit references to the IHCF, or discourse to indicate a tangible awareness of the international HU agenda or context.

Therefore, this ‘priming phase’ will involve dissemination of the empirical data that has been presented within each of the five studies that collectively comprise this thesis to Senior Management (Executive, Heads of Faculty/School, Heads of Dept.) within the case HEI. The purpose of this multi-modal dissemination will be to (i) brief University Management regarding the sectoral ‘state of play’ in terms of the impetus to implement the settings approach to health promotion through the medium of the IHCF, and (ii) outline the current empirical data that has been gathered across all campuses of the case HEI, with a view to precipitating internal retrospection on urgent health-related needs. In addition to distribution of the empirical research outputs (Studies One to Five, Chapters 4-8), this dissemination phase will encompass a ‘town-hall’ presentation, given the high-impact of a previous presentation in this format that was explicitly noted by Senior Management stakeholders within Study Five, “I also remember that morning [previous presentation at a Senior Staff event, see Appendix I] where people were shocked by some of the things you found” (FG02, Senior Academic, HoD)
In addition to highlighting extant needs from a duty of care perspective, this priming phase will also empirically substantiate the direct alignment between campus HP activities and fundamental thematic priorities within the case HEI, such as students’ mental health (Study One, see Chapter 4), staff productivity (Study Two, See Chapter 5), in addition to matters related to morale, engagement, and curricular development (informed by discourse across Studies Three-Five, Chapters 6-8).

9.6.2 IHCF Phase 1: Commitment to the Healthy Campus Charter (Commit)

“...it's not lip service - it's real, it’s grounded, it's there” (FG01, HoD)

Following the ‘priming’ phase outlined above, the formal entry point to the implementation of the IHCF model should commence with a tangible HEI commitment to enact the principles of the settings-based approach to HP (Healthy Ireland, 2021b). As outlined within the IHCF, this commitment should be enacted through the signing of the Healthy Campus Charter by the case HEI’s President and the Students’ Union President (Healthy Ireland, 2021b).

With specific relevance to the case HEI, qualitative data in Study Four and Study Five indicated that a campus HP policy and structure should also encompass three further commitments from the case HEI to:

i. Guarantee sufficient and sustainable HP resourcing through a central funding mechanism
ii. Ensure coherency between the rhetoric and actions of all management levels within the HEI to leverage the hierarchal behavioural role modelling effect outlined in Study Four (Chapter 7)

iii. Devise and disseminate a cross-HEI HP strategic plan, to ensure the streamlined and cohesive governance of health-related activities and programmes, whilst concurrently preserving the HEI’s extant culture of collegial innovation and collaboration (Bickerdike et al., 2018)

As a notable cultural phenomenon within the case HEI observed in Study Five (Chapter 8), it appeared that the magnitude of resourcing allocated to a specific unit or agenda not only influenced scalability and roll-out, but was also perceived by the campus population as a latent indicator of the relative ideological and/or strategic ‘value’ placed on the agenda by HEI Leadership. Although several hypothetical funding structures were outlined by members of Senior and Executive Management in Study Five (Chapter 8), collective insights suggested that an optimal model within the context of the case HEI would serve to resource:

i. An Operational HP Co-Ordinator with access to a sufficient and secure budget

ii. A Senior-Level ‘Faculty Lead’ to oversee an aligned research and evaluation strategy

iii. Wider organisational embedding of the HP initiative through either annual Departmental seed funding calls, and/or designated time allocations to support multi-disciplinary, and multi-strata, HEI HP ‘Champions’.
9.6.3 IHCF Phase 2: Co-ordination and Steering Group (Co-ordinate)

“It won’t happen unless someone is there to drive it” (FG08, Senior Management)

This thesis supports the rationale for the establishment of a tiered HP Leadership Structure (as depicted in Figure 9.1) comprised of a designated Senior Leadership Group (SLG), and further supported by a cross-HEI Steering Group. The SLG would include a designated Executive Nominee, in addition to two specifically resourced positions (as outlined above); a Campus HP Co-Ordinator, and a Faculty Lead to oversee aligned research, evaluation metrics, and cross-HEI efforts to embed health within both undergraduate and postgraduate curricula. Notably, several Irish HEIs have designated human resource drivers to oversee the delivery of their campus HP initiatives (Darker et al., 2021; UCD, 2016; UL, 2019), and an ‘operations-faculty’ partnership structure has also been purposively comprised within the overarching ethos of a HU-aligned initiative (‘Healthy Trinity’) in Trinity College Dublin (Darker et al., 2021).

The inclusion of the Faculty Lead within the proposed SLG is warranted in response to the substantial impact of empirical data to serve as an objective ‘call to action’, as evidenced by the reactions of several participants in Study Five to the visual prompt pertaining to the health-related challenges identified amongst the HEI’s population (Chapter 8). In terms of the current campus HP initiative, a governance structure comprised of a designated Faculty Lead could prudently leverage the inherent research and innovation ecosystem within the case HEI to inform and evaluate internal HP activities.
Finally, as proposed during the preliminary conceptualisation and development of the campus HP initiative (Bickerdike et al., 2018), the SLG should establish a cross-HEI Health Promotion Steering Group’. Collective findings from each respective study comprised within this thesis indicate that this campus HP Steering Group should serve to ensure multi-strata hierarchal representation, including representatives of all Satellite Campuses of the case HEI. Whilst it was beyond the scope to investigate the direction of associations or causality within the cross-sectional empirical studies presented within this thesis, it is evident that (i) addressing inequities in terms of access to centralised health and welfare supports, and (ii) facilitating more equitable engagement with broader socio-cultural aspects of both the student and staff experience, should constitute a priority of the campus HP initiative. Both the IHCF (Healthy Ireland 2021b), and similar international settings-based literature (Dooris et al., 2020; Newton et al., 2016), consistently advocate for a ‘whole-HEI’ transformative approach to HP. Therefore, as illustrated in Figure 9.1, the proposed campus HP operational structures explicitly encompass Satellite Campus representation on (i) the Steering Committee, (ii) a HEI-wide ‘Cohesion and Reach’ Working Group, and (iii) all other future campus HP Working Groups, as relevant.

In terms of the specific target stakeholders for the campus HP Steering Group, the health-related challenges identified amongst the case HEI’s population within Study One and Study Two (Bickerdike et al., 2019; 2022), in addition to the triangulated model of the ecological determinants of health and potential intervention-levels within the case HEI (Figure 7.1), indicate the need to include a myriad of cross-HEI stakeholders, as outlined in Table 9.1.
### Table 9.1 Potential Campus HP Steering Group stakeholders, informed by the ecological determinants of health within the case HEI, previously outlined in Chapter 7

<table>
<thead>
<tr>
<th>Socio-ecological determinant and/or health-related domain to address (As identified previously in Figure 7.1)</th>
<th>Potential Campus HP Steering Group Stakeholder(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic contexts</td>
<td></td>
</tr>
<tr>
<td>Access Officer</td>
<td>Satellite Campus Representatives</td>
</tr>
<tr>
<td>Primary campus (main vs. satellite)</td>
<td>Disability Support Officer</td>
</tr>
<tr>
<td>Additional needs</td>
<td>Student Services Manager</td>
</tr>
<tr>
<td>Environmental stressors</td>
<td></td>
</tr>
<tr>
<td>Registrar</td>
<td>Academic Affairs Manager</td>
</tr>
<tr>
<td>Teaching &amp; Learning</td>
<td>Head of Teaching &amp; Learning Unit</td>
</tr>
<tr>
<td>Extant workloads (both students and staff)</td>
<td>Human Resources</td>
</tr>
<tr>
<td>People and relationships</td>
<td></td>
</tr>
<tr>
<td>Societies’ Officer</td>
<td>Student Engagement Officer</td>
</tr>
<tr>
<td>Visible messaging and role-modelling</td>
<td>Marketing Officer</td>
</tr>
<tr>
<td>Social activity and engagement</td>
<td></td>
</tr>
<tr>
<td>Food environment</td>
<td></td>
</tr>
<tr>
<td>Environmental stressors</td>
<td>Buildings &amp; Estates Manager</td>
</tr>
<tr>
<td>Access Officer</td>
<td>HEI Architect</td>
</tr>
<tr>
<td>Campus PA provision</td>
<td>Tendered Catering Company Manager</td>
</tr>
<tr>
<td>Extant workloads (both students and staff)</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
</tr>
<tr>
<td>Student-specific contexts</td>
<td></td>
</tr>
<tr>
<td>Student lifestyles and contexts</td>
<td>Student Union Representative</td>
</tr>
<tr>
<td>Addressing risk-related metrics, equitable health care</td>
<td>Medical Centre Representative</td>
</tr>
<tr>
<td>Mental health and wellbeing</td>
<td></td>
</tr>
<tr>
<td>Mental health and welfare</td>
<td>Head of Counselling Service</td>
</tr>
<tr>
<td>Physical activity (PA)</td>
<td></td>
</tr>
<tr>
<td>PA and structured sport</td>
<td>Sport and/or PA Officer</td>
</tr>
<tr>
<td>Staff specific contexts</td>
<td></td>
</tr>
<tr>
<td>Social wellbeing</td>
<td>Staff Social Committee Representative</td>
</tr>
<tr>
<td>Healthy ageing, inclusivity, gendered roles</td>
<td>EDI Representative</td>
</tr>
<tr>
<td>Aligned agendas</td>
<td></td>
</tr>
<tr>
<td>Integrating with health system</td>
<td>HSE Health Promotion Unit</td>
</tr>
<tr>
<td>Alignments with further settings-based agendas</td>
<td>'Healthy Cities’ Representative</td>
</tr>
<tr>
<td>Inclusivity and equity</td>
<td>EDI Manager</td>
</tr>
<tr>
<td>Sustainable development</td>
<td>Sustainability and/or Green Campus Officer</td>
</tr>
</tbody>
</table>
9.6.4 IHCF Phase 3: Activity Mapping, Needs Assessment, Consultation (Consult)

“...amazing pockets of fantastic work, but nobody knows what anybody else is doing”

(IV07, PMSS)

As an emergent finding from Chapters 7 and 8, and as outlined within section 9.4.1 above, qualitative consultation has unequivocally substantiated the rationale for an urgent formalised mapping of health-related activity across the ecosystem of the case HEI. This is consistent with nomenclature and recommendations comprised within the ‘Consult’ Phase of the IHCF implementation cycle (Healthy Ireland, 2021b).

At organisational level, the insights and experiences revealed within Study Four (Chapter 7) and Study Five (Chapter 8) also collectively indicated a lack of cohesion in terms of the internal dissemination of health-promoting activities and initiatives. In the context of the performance-driven, and highly competitive, nature of the higher education environment (Musselin, 2018), it is imperative that campus HP communications and events are disseminated impactfully and strategically. To maximise impact, whilst preserving the HEI’s extant culture of collaboration (Bickerdike et al., 2018), it may be prudent within campus HP operational structures to establish a ‘Cohesion & Reach’ working group (Figure 9.1). This group could oversee the development of a consistent branding and attribution policy that would be applicable to existing (as identified within the above-referenced mapping exercise) and future health-related events and activities within the case HEI. This would serve to ensure that branding and communications pertaining to such activities explicitly acknowledge the specific campus stakeholder(s) involved, whilst also consistently aligning with a cohesive, and streamlined, campus HP strategy.
As an additional pertinent finding emergent from the qualitative data set, it appears that embedding the HP initiative across all Departments and units of the HEI would serve to enhance equitable opportunities for all students and staff to engage. Pragmatically, this could be facilitated through the resourcing of nominal time buy-outs to support cross-HEI ‘Champions’ as part of an overall transformative approach. Whilst the need to culturally adapt the delivery of HP programmes has been acknowledged in international literature (Suárez-Reyes & Van den Broucke, 2016), similar cultural adaptation may be required during the implementation of campus HP policies and initiatives at Departmental level within the regional, multi-campus case HEI, given its substantially diverse disciplinary remit and programme offerings.

9.6.5 IHCF Phase 4: Planning and Implementation (Create)

“... (the doorway) for each individual (to) pursue what they need to have healthy life”
(FG13, Current PG Student & UG Alumnus)

Dooris and colleagues (2010) previously emphasised thematic working groups, informed by comprehensive setting-specific needs assessments and stakeholder mapping processes, as fundamental operational requirements within their conceptual framework guiding the implementation of the HU approach within HEIs in England. Within the case HEI, the proposed campus HP operational model depicted in Figure 9.1 provides an indicative structure to guide the establishment of a series of thematic groups to map, design, implement, and evaluate interventions pertaining to the strategic priorities that have been identified within, and collectively across, all phases of the current research.
Of particular note is the inclusion of a designated ‘Curriculum’ Working Group, established to oversee the purposive embedding of health within the case HEI’s diverse academic curricula. In Ireland, there has been a recent national impetus to embed ‘wellbeing’ within higher education curricula, as stated in a joint report commissioned by the Union of Students in Ireland (USI) and the National Forum for the Enhancement of Teaching and Learning in Higher Education (Byrne & Surdey, 2021). As discussed in Study Five (Chapter 8), it is imperative that the case HEI’s curricula are informed by the sociological determinants of health, and inclusive of opportunities to engage in educational and/or capacity building activities to enhance health and wellbeing.

9.6.6 IHCF Phase 5: Evaluation, Dissemination, and Future Planning (Celebrate and Continue)

“...wouldn’t it be fantastic if we were to be the university that, you know, leads there, best University in Ireland let’s take that as a starting point in terms of health promotion”

(IV12, Executive Management)

Finally, one of the stated objectives of Study Five (Chapter 8) was to identify any latent drivers and/or internal synergies that could serve to inform and progress the implementation of a HU-aligned campus HP initiative within the case HEI. In this regard, the high intrinsic value placed upon external validation, accreditation, and success was particularly evident within the contributions of Senior Management stakeholders, who perceived an opportunity for the HEI to become known as an exemplar HP model. Future action(s) and/or strategies should therefore explicitly prioritise high-impact peer reviewed research outputs, in addition to the dissemination of practice-based outputs via international HU networks and aligned fora. Evaluation has also been encompassed within the proposed operational structures (Figure 9.1), whereby process outcomes from
each of the thematic working groups will be consolidated to constitute an overarching 3-year impact report. Fundamental process and outcome evaluation measures should be devised to align with the case HEI’s strategic priorities, and further used to guide the future strategic priorities of the HP initiative, in addition to substantiating its ongoing resource case.

9.7 Macro-Level Empirical Recommendations and Reflective Insights

A suite of research recommendations and practice applications arising from, and across, all phases of this research process are outlined in detail in sections 9.2 to 9.5 above, and within each empirical chapter of this thesis (Study One to Study Five; Chapters 4-8). Moreover, a collection of empirically informed operational principles, and a proposed HP practice model (Figure 9.1) through which to implement the Irish Healthy Campus Framework within the ecological context of the case HEI, are presented in section 9.6. The current section aims to briefly synopsise pertinent ‘macro-level’ principles and overarching recommendations for future research, policy, and practice. This aims to serve as a concise, yet critical, final consolidation of empirical and experiential insights.

9.7.1 Macro-Level Research Principles

i. The current baseline needs assessment substantiates the organisational and fiscal rationale for a designated research strategy aligned with a settings-based campus HP initiative within the case HEI. This research strategy should extend to encompass both domains and determinants of health within the complex setting.
ii. Future studies should endeavour to infuse a settings-based paradigm within their methodological approaches and designs. Further research is required to address the extant sectoral dearth of evidence pertaining to broader social, environmental, and policy-related determinants of health within HEI settings, as an adjunct to longitudinal population research. Whilst health domains and/or organisational KPIs serve as prudent outcome measures, systems-based perspectives are warranted to guide the design, implementation, and macro-level evaluation of settings-based HP interventions within the case HEI, and indeed more broadly within the higher education sector.

iii. Given the highly dynamic nature of the contemporary higher education sector, longitudinal study designs are required to establish and monitor trends over time. Moreover, future studies should endeavour to incorporate objective measures and implement stratified sampling strategies.

iv. The Irish Healthy Campus Network constitutes a pragmatic medium through which to develop and implement a more cohesive and co-ordinated national research strategy to further enhance the implementation and evaluation of settings-based HP interventions within, and across the higher education sector. The adoption of such an approach could serve to align with the research mandates of HEIs, whilst concurrently increasing the rigour with which both process and impact outcomes of the Irish Healthy Campus Framework are evaluated. Greater efforts to standardise measures, metrics, and thematic priority areas could serve to upscale the impact of ‘Healthy Campus’ research through multi-setting collaborations, high impact research outputs, and international research funding applications.
9.7.2 Overarching Policy and Practice Principles

i. The Irish Healthy Campus Charter and Framework (Healthy Ireland, 2021b) has accelerated the sectoral impetus to deliver on settings-based HP. As outlined in Study Five (Chapter 8), meaningful enactment of this framework necessitates senior-management commitment, sustainable resourcing, and ecologically valid operational structures (see section 9.6).

ii. The current baseline needs assessment strongly indicates that greater structural empowerment to support the health and wellbeing of students and staff is required within the case HEI setting. In Study Four (Chapter 7, Figure 7.1) pervasive workload-related stressors, academic demands, campus culture, role modelling and social connectedness were qualitatively described as mediators of health.

iii. As previously emphasised by Dooris et al. (2014), aligning campus HP with the case HEI’s ‘core business’ should serve as a fundamental overarching principle. Whilst the case HEI does not currently have a designated HP strategic plan (Study Three, Chapter 6), potential internal policy alignments through which to embed health and wellbeing throughout the setting should be comprehensively mapped.

iv. Finally, workload-related demands associated with teaching, learning, and administration within a semesterised model were described as pervasive stressors (Study Four, Chapter 7). Although the HEI’s curriculum is comprised as a distinct thematic area within the proposed campus HP operational structures (Figure 9.1), progression towards more health-enhancing modes of programme delivery will require both internal policy retrospections, in addition to broader sectoral discourse to set the scene for cross-agency advocacy (section 7.4.2).
9.7.3 Final Reflective Insights as an Embedded Researcher

In Chapter 1 (section 1.4.7), a preliminary reflection on the experiential shaping of the current research design was outlined. In terms of final retrospections, there are also several pertinent insights from my experiences as an embedded researcher (ER) that provide greater context to the empirical discourse comprised within this concluding chapter.

Interestingly, the complexities of the intricate role of an ER have been recently noted in the literature, in the context of systems-based approaches to physical activity promotion (Potts et al., 2022). In this regard, the inherently flexible and adaptive nature of embedded research was outlined, which was reflective of my experiences throughout the implementation of the current baseline needs assessment. Notably, a chronological evolution towards greater embodiment of the settings-based paradigm is appreciable throughout this thesis, whereby there is an emphasis on holism and ecological determinants of health within Study Four (Chapter 7) and Study Five (Chapter 8), relative to earlier quantitative studies which focussed on individual-level metrics and behavioural outcomes. This progression was by design (QUAN-QUAL methodology), but was further compounded by my experiential learnings and exposure to the complex socio-ecological environment of the case setting.

Overall, inherent familiarities with the intricate workings of the case HEI served to enhance the depth at which I could engage with the data triangulation process, from which one of the fundamental outputs arising from this thesis was derived (Figure 7.1). Similarly, my cognisance of the pragmatic and resource constraints that pose structural limitations to the scope of settings-based research and HP practice within HEIs also
evolved with time, and served to substantiate the rationale for a demonstrable and accessible tool through which adopt an ecological approach towards the design and implementation of HP interventions (section 9.5).

Secondly, as a wholly unprecedented event that usurped aspects of the higher education sector, the emergence of COVID-19, and its impact upon health outcomes, societal norms, programme delivery, and indeed relationship building within the case HEI, will necessitate further exploration through a settings-based lens. It is possible that the pandemic may have accelerated the rationale for HP practices and policies tailored towards remote contexts, as previously alluded to by Dooris (2013), who noted the emergence of virtual HP settings within contemporary society.

Finally, whilst the current programme of research constitutes a novel contribution to the literature in terms of breadth; its scope and boundaries are concurrently acknowledged throughout this thesis. As outlined by Potts et al. (2022), an ER must remain cognisant of “boundaries of the system”, and accept that “it is impossible to evaluate everything” (p.9). In the current baseline exploratory needs assessment, it was not feasible to incorporate (i) systems-based mapping processes within the methodological design, or (ii) a greater breadth of socio-economic variables as covariates in quantitative analyses. In addition, demographic nomenclature within earlier phases of the quantitative research (emphasis on ‘sex’ versus ‘gender’, for example) do not serve to reflect the depth of understanding garnered with time with respect to the intricate associations between gender identities, inequities, ethnicity, socio-economic conditions and health-related perspectives and outcomes. Similarly, whilst Study Three served as a crucial baseline exploration of the case HEI’s environment, these data were pragmatically confined to two
domains (physical activity provision, and food and beverage outlets). As an ER, my appreciation of the policy alignments between the ‘Healthy University’ (HU) settings-based paradigm (Okanagan Charter, 2015) and concurrent HEI agendas has also chronologically evolved. Whilst equity and sustainable development are well-established HU principles (Dooris et al., 2010), my worldview has become increasingly appreciative of the ‘real-world’ synergies between HP and concurrent policies that shape health in the case HEI such as ‘Athena Swan’ (Advance HE, 2020), EDI initiatives, the HEA System Performance Framework (HEA, 2018b), in addition to HR policies, and teaching and learning strategies. Whilst a clear commitment to a cohesive HP plan and structure is urgently required within the case HEI (section 9.6), the dearth of a HU policy may not necessarily infer the absence of policy-level opportunities to structurally support positive health and wellbeing.

9.8 Limitations

The specific methodological limitations of each of the five empirical studies have been encompassed within each of the respective thesis chapters (Chapters 4-8). However, there are several overarching limitations and interpretive considerations of macro-level relevance to this thesis as a whole:

- Cross-sectional, questionnaire-based designs have been extensively utilised within both Irish and international literature to investigate the collective health and lifestyle variables exhibited by HEI student cohorts (El Ansari, Stock, Snelgrove, et al., 2011; Hope et al., 2005; Murphy et al., 2015). In the current research, whilst the cross-sectional design enabled a breadth of quantitative analyses (such as multiple linear regression and a cluster analytical procedure), any association(s) identified cannot be
deemed causal, as explicitly acknowledged in both Study One (Bickerdike et al., 2019) and Study Two (Bickerdike et al., 2022).

- The design of both the student and staff questionnaire instruments was an iterative process, and the psychometric properties of any validated measures were reviewed and considered. Although the internal consistency of the AUDIT instrument and its subscales were reported in Study One (Bickerdike et al., 2019), there was no formal test of reliability conducted on the questionnaire instruments in their totality.

- Whilst the sampling strategy employed within Phase One (Study One and Study Two) was purposively designed to provide all students and staff with equitable opportunities to participate in a HEI-wide study to inform a campus HP initiative, the convenience sampling approach may have introduced selection bias. Relative to HEI records (CIT, 2018), it appears part-time students were under-represented in Study One (11.6% of the sample in Study One vs. the 2015/16 case HEI records which stated that 45.7% of enrolments were part time). In Study Two, there appeared to be an over-representation of female ‘academic’ (52.7% vs. 44%) and ‘clerical/support/other’ staff (76.4% vs. 59%) relative to the case HEI’s data comprised within the Higher Education Authority’s ‘Institutional Staff Profiles’ published in 2016 (HEA, 2016). Whilst age categories were not wholly comparable, the proportional age demographics of the staff sample in Study Two were broadly similar to those presented in the HEA System Performance Institutional and Sectoral Profiles for 2016/17: (i) HEA data 21% of staff aged ‘20-39’ vs. Study Two sample 15.8% aged ‘18-34’, (ii) HEA data 51% aged ‘40-54’ vs. Study Two sample 64.1% aged ‘35-54’ (iii) HEA 28% aged ‘55+’ vs. 20.1% aged ‘55+’ in Study Two; (HEA, 2019).

- All quantitative data reported across this thesis (predominantly Study One and Study Two) were self-reported, and therefore potentially subject to recall and/or social
desirability bias. Notably, self-reported physical activity data were not supported with objective measures, although purposely adapted items were utilised to ensure maximum cultural relevance to the cohort, and to ensure that non-exercise domains were included within participants’ self-reported activities during the 7 days’ prior to data collection. Similarly, Body Mass Index (BMI) calculations were based on self-reported height and body mass, which may have been further skewed by the extant misperceptions of body habitus that were exhibited by both students and staff. However, as outlined in Study One (Bickerdike et al., 2019) it is likely that the ‘true’ prevalence of overweight and obesity is greater than reported in the current research, given the under-reporting of body mass, and over-reporting of height that was reported in previous research involving HEI students (Wardle et al., 2006).

- Within both Study One and Study Two, a progressive decline in item-response rates was observed throughout each instrument, suggesting participant fatigue and/or disengagement. Missing data were not imputed, and all analyses were conducted on a pairwise basis, and/or categorical data were reported in terms of the valid number of responses received to each item. As outlined in Chapter 3 (Table 3.2), in both instruments, all participants were exposed to the sections of each instrument in the same sequential order. Consequently, valid response rates to latter sections were reduced, and this may have particularly impacted upon the items pertaining to mental health and sleep amongst both cohorts.

- For both Study One and Study Two, it is possible that self-report data may have been mediated by acute ‘time of year’ stressors. However, the recall periods embedded within several validated scales may have somewhat controlled for this. In this regard, the AUDIT alcohol instrument enquires about the previous year, and both psychometric scales (EVI and MHI-5) require recollection over the past four weeks.
The HEI email databases used to disseminate the questionnaire instruments in Phase One were generated centrally. Therefore, it is possible that the inclusion of obsolete email addresses (students who had recently withdrawn from the case HEI, non-tenured/casually employed or recently retired staff) may have reduced the internal generalisability of the findings (Bickerdike et al., 2022).

Finally, whilst not a methodological limitation, the unprecedented onset of the COVID-19 pandemic, and the magnitude of its effect on the higher education sector should be borne in mind as an interpretive consideration in terms of drawing inferences and/or comparisons between the initial phases of this research, which were prior to the pandemic, and the final qualitative phase. In this regard, Phase Three (Study Four and Study Five) was implemented after the onset of the pandemic and coincided with a ‘hybrid’ model of teaching and learning within the case HEI.

9.9 Conclusion

HEIs constitute potent HP settings, and have been directly called to action to embed health and wellbeing within their core operational mandates by the global Okanagan Charter for Health Promoting Universities and Colleges (2015). As a mixed methods needs assessment, this thesis aimed to empirically inform the strategic development of a campus HP initiative within a multi-campus ‘case’ HEI in Ireland. Across five distinct empirical studies, this research has also served to address gaps within extant HP literature, and has informed a practitioner-focussed output that ecologically models the complex determinants of health and wellbeing.
Overall, concerning risk-related metrics were identified amongst the case HEI’s student cohort, particularly amongst male students. A substantial proportion of the variance in students’ positive mental health was collectively attributable to a series of health and lifestyle components, further substantiating the rationale for broad-based campus HP activities to enhance students’ wellbeing. Sub-optimal health and lifestyle parameters were also evident amongst a heterogeneous sample of staff, whereby lifestyle parameters appeared to cluster along a continuum. Moreover, those who exhibited the least healthy cluster of metrics reported significantly greater stress, a higher BMI, and greater absenteeism.

Within qualitative contributions, both students and staff described an ideological support for the promotion of health and wellbeing, and perceived intricate associations between health, happiness, social belonging, and quality of life. However, structural, and socio-ecological barriers within the case HEI setting appeared to impact upon the campus population’s collective capacity and agency to habitually engage in health promoting behaviours.

In light of the renewed impetus to implement the settings-based Irish Healthy Campus Framework within the higher education sector (Healthy Ireland, 2021b), the five empirical studies that collectively constitute this thesis, have served to generate an empirically rooted, ecological model to guide, map, and evaluate future campus HP activity within the case HEI, and potentially beyond. Finally, by linking data with practicum, this research has also informed a setting-specific campus HP operational structure through which to embed health and wellbeing with all facets of the HEI, in accordance with the ‘whole-campus’ paradigm (Healthy Ireland, 2021b).
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