More than "resilience":

A SCOPING REVIEW OF SOCIETAL AND INSTITUTIONAL RISK AND PROTECTIVE FACTORS FOR STUDENT MENTAL ILL-HEALTH IN THE UK

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Contents

Key terms

Social-ecological Model: a theory which sees the interaction between the individual and their environment as determining their health outcomes (Golden & Earp, 2012). The social-ecological model used in this review has four levels: individual (e.g. personal lived experiences, coping strategies), relational (e.g. family and friends), institutional (e.g. educational establishments), and societal (e.g. laws).

Mental Health: either the absence of a diagnosable mental health condition (e.g. depression) or an inner sense of emotional and psychological wellbeing, which may fluctuate according to the demands of day-to-day life, but enables an individual to engage with the world according to their wants and needs and to respond to the wants and needs of others appropriately (World Health Organisation, 2018).

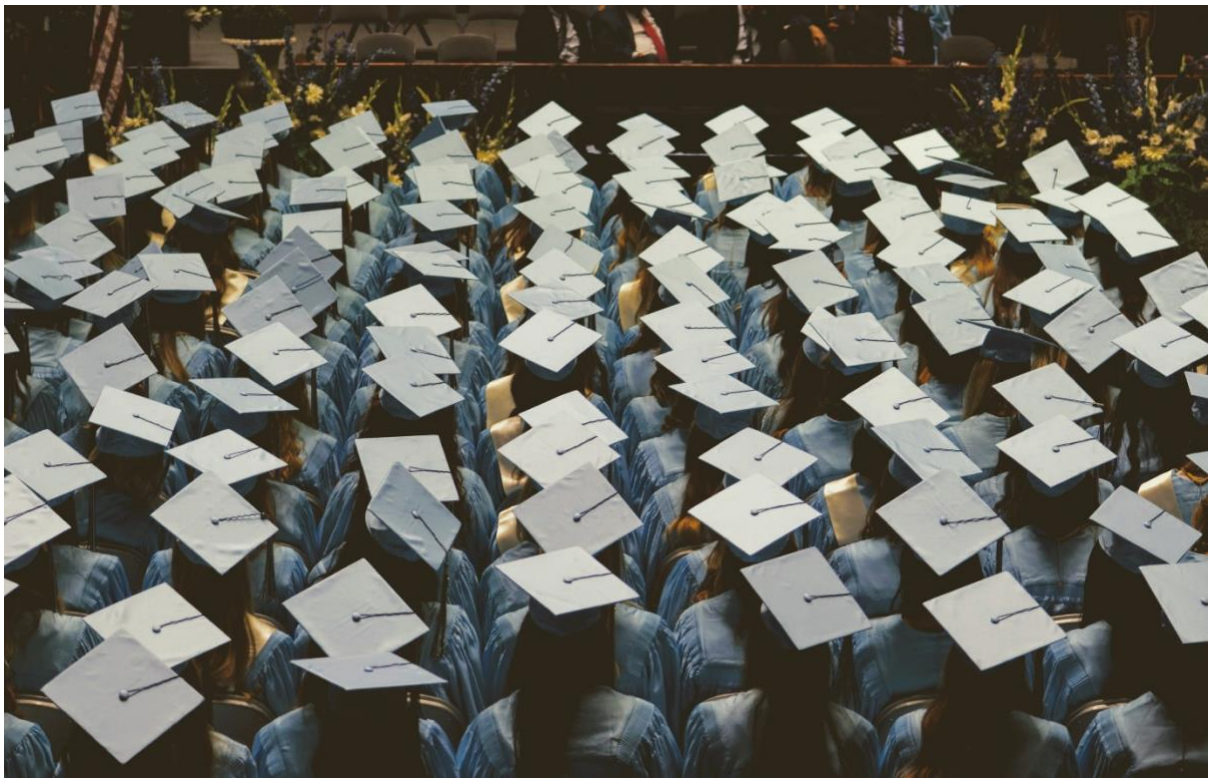
Preventative Public Health: a branch of research which focuses on maintaining and improving the wellbeing of populations and can be conceptualised as having three tiers: primary, secondary, and tertiary prevention (Gough, 2013).

Primary Prevention: a tier of preventative public health which aims to minimise the occurrence of ill-health happening in the first place.

Protective Factors: in the context of this report, this refers to institutional or societal conditions which reduce the likelihood of mental ill-health developing (World Health Organisation, 2004).

Risk Factors: in the context of this report, this refers to institutional or societal conditions which increase the likelihood of mental ill-health developing (World Health Organisation, 2004).

Student Mental Health: in the context of this report, this refers to the mental health of undergraduate students in the UK.



Executive Summary

Background

1. In 2018, over one fifth of university students across England, Scotland and Wales had at least one diagnosed mental health condition (Pereira et al., 2019).
2. In the same study, one third of university students described experiencing a serious personal, emotional, behavioural, or mental health problem, for which they needed professional help (Pereira et al., 2019).

Aims

3. Student mental health is often considered from an individual or relational perspective, with less consideration being given to institutional and societal influences.
4. This review aimed to identify what is known about institutional and societal risk and protective factors for undergraduate student mental ill-health in the UK and what gaps exist in the literature on these.

Methods

5. The scoping review used systematic searches and pre-defined inclusion and exclusion criteria to identify relevant research on this topic from the past 15 years.
6. Additionally, a student consultation group informed the design of the review and the interpretation of the findings.

Findings

7. Forty publications were identified as relevant to the review.
8. A number of studies had to be excluded because they did not report the findings for undergraduates and postgraduates separately.
9. The institutional risk factors identified in prior research included higher workload, greater time pressure, exams, waiting for feedback, group work, hidden course-costs, the lack of alcohol-free events on campus, and the exclusion and discrimination of minority groups.
10. The institutional protective factors identified in prior research were a sense of satisfaction from meeting high workload demands, positive and supportive feedback on assessments, well-designed group work, clear communication, well-structured timetables, access to online resources and information, extended opening hours for support services, and health and leisure facilities on campus.
11. The societal risk factors identified were tuition fees, the student finance system not providing sufficient funding, applying for estrangement status with the Student Loans Company, poor travel and transport services, and uncertain immigration status.
12. The two societal protective factors identified were being in receipt of a maintenance grant (which is no longer offered) and good public transport.

Limitations of prior research

13. As many of the studies were limited to one higher education institution (HEI), it is difficult to determine how generalisable the institutional factors are across HEIs in the UK.
14. As many of the studies focused on one subgroup of students (e.g. refugee students, student parents, students estranged from their parents), their

experiences may not be representative of UK students more generally.

15. Previous research has generally been conducted on a small sample of students, using a cross-sectional design (i.e. the study was conducted at one moment in time and did not assess how the findings changed over time).
16. Several of the studies in the review acknowledged that they had used statistical tests inappropriately.

Conclusions

17. There is a lack of research into societal factors affecting undergraduate student mental ill-health in the UK.
18. Among institutional factors, there is little research into factors other than course- and study-related factors.
19. Many of the factors identified have limited evidence to support them: it is unclear which have the largest impact on UK undergraduate mental ill-health and it is difficult to say with certainty whether these factors can be generalised across all students or HEIs in the UK.

Recommendations for future research

20. Future research should consider the impact of campus culture (e.g. institutionalised racism, diversity of the student population, norms around drug and alcohol use), university policies (e.g. around diversity and inclusion, social media and communication, or student complaints), university facilities (e.g. health and leisure centres), and university environments (e.g. green spaces) as institutional factors which may affect undergraduate student mental ill-health in the UK.
21. Future research should consider societal factors, such as national or regional policies and laws (e.g. austerity policies, the expansion and marketisation of Higher Education, and the impact of the Higher Education and Research Act 2017), structural inequalities (e.g. sexism, racism or social class), cultural norms (e.g. around social media, sexual harassment) and aspects of local environments or communities (e.g. how welcoming the local community are to students, or to members of marginalised groups) on UK undergraduate students' mental ill-health.
22. Future research should consider both risk and protective factors for mental ill-health.
23. Future research should consider the relative importance of the factors identified in this review and which areas impact on student mental ill-health the most.
24. Future research should not be solely limited to specific courses or sub-groups, but also consider broader issues affecting all/the majority of UK undergraduate students.
25. Future research should compare across UK universities to identify best practices and "what works".
26. Future research should report the findings for undergraduates and postgraduates separately.

Introduction

Background

The University Student Mental Health Survey 2018 — a survey on mental health within a diverse sample of over 37,500 students from 140 UK universities — found that just over one fifth (21.5%) of the students had received one or more mental health diagnoses, and just over half of these (11.9%) had received two or more (Pereira et al., 2019). Of those students who reported a prior mental health diagnosis, 75.5% indicated that they were currently experiencing symptoms associated with the diagnosis. However, the authors argued that, rather than restricting research to diagnoses, it is important to look at psychological distress more broadly. When participants were asked about prior psychological difficulties, more than a third of respondents (33.9% - a higher percentage than the percentage who had received a diagnosis) reported experiencing a serious personal, emotional, behavioural or mental health problem for which they needed professional help. Worryingly, however, only a third of the students who reported needing help with their mental health accessed the services provided by their university. Whilst it is clear that students' psychological needs at university are not being met, the factors which led to this situation are less clear. The purpose of this review was to identify factors leading to mental ill-health among undergraduate students in the UK.

In order to consider the range of factors which may be linked to student mental ill-health, this review used a four-level social-ecological model (Caine, 2020). A social-ecological model recognises that phenomena are grounded in an interplay between individuals and their social surroundings. This model allowed us to group

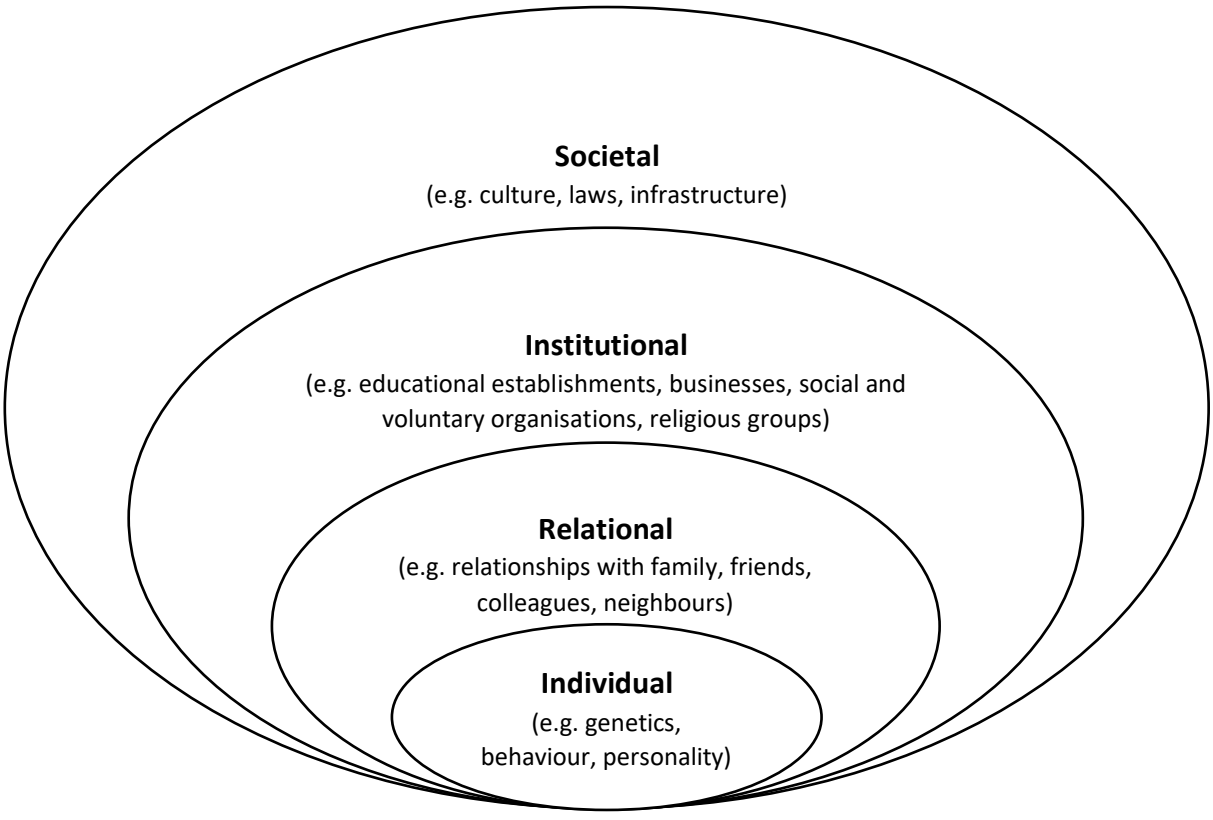


Figure 1: A diagram of the social-ecological model according to Caine (2020).

factors linked to student mental ill-health into four levels, reflecting the four levels of the social ecology: the individual (e.g. genetics, behaviours, personality), their relationships with others (e.g. family, friends, colleagues, neighbours); the institutions they are a part of (e.g. educational establishments, businesses, social and voluntary organisations, religious groups) and the society in which they live (e.g. culture, laws, infrastructure; see Figure 1). This model was used to structure factors affecting student mental health and student mental ill-health. At the individual level, we might expect factors such as our physical health, daily routine, personality, and genetics to affect student mental health. At the relational level, factors such as family, friends, peers, tutors, and support staff might be considered, but relationships with other professionals, such as health professionals, carers, or employers might also be relevant. At the institutional level, we might consider university policies and procedures, the facilities and buildings belonging to the university, course requirements, availability of resources, and campus culture. Finally, at the societal level, education and employment law, the UK Government's student loan system, media portrayals of students, transport, housing, health and social services, crime levels and regional or national culture might be relevant.

We undertook initial scoping searches of previous academic research on student mental ill-health for the whole social-ecological model, and through those searches, identified that, whilst there is considerable research on the individual and relational levels of the social ecology (Farrer et al., 2013; Howell & Passmore, 2019; Ma et al., 2019), there is less consideration of what can be done by universities and society as a whole to improve student mental health. Consequently, this review focuses on the institutional and societal levels of the model. Further, these levels of the social ecology are often neglected in research more broadly, and in reviews, which tend to focus on the individual and relational levels instead (Enns et al., 2016). We hope that examining societal and institutional factors for student mental ill-health can be a catalyst for change in societal and institutional policies which relate to undergraduate students in the UK.

There are already many reviews of interventions for students currently experiencing mental ill-health (Farrer et al., 2013; Howell & Passmore, 2019; Ma et al., 2019); however, few reviews exist which consider how we might prevent these difficulties from occurring in the first place. As such, we have chosen to focus on research relating to 'primary prevention' (a tier of preventative public health which aims to minimise the occurrence of ill-health happening in the first place), and more specifically, on risk and protective factors for student mental ill-health. In the context of this report, 'protective factors' refers to institutional or societal conditions which reduce the likelihood of mental ill-health developing (World Health Organisation, 2004) and 'risk factors' refers to institutional or societal conditions which increase the likelihood of mental ill-health developing (World Health Organisation, 2004). By focusing on risk and protective factors, this review aims to identify what could be targeted by institutions or wider society to prevent mental ill-health from occurring among students. One fifth of students who have a mental health diagnosis at university have been given that diagnosis since starting their course and three quarters of students with a mental health diagnosis are currently experiencing symptoms (Pereira et al., 2019). Knowing which societal and institutional factors increase or reduce the likelihood of mental ill-health could allow for the development of interventions or policy changes which reduce the occurrence of mental ill-health at university.

This review focuses on students at UK HEIs, as the UK education system can differ from those in other countries, and as such, it provides unique experiences and challenges for students

(Schultz, 2019). Further, this review focuses on undergraduate students as they comprise the largest proportion of the student cohort in HEIs, and their social situations are often significantly different to those of postgraduate students (Woolston, 2019).

The purpose of this scoping review was to map the empirical research on institutional and societal risk and protective factors for undergraduate student mental ill-health in the UK. This report summarises the existing research on this topic and organises the findings by level of the social-ecological model (i.e. institutional and societal). We also identify gaps in the existing research, with a view to informing further research in this area. The following review questions were developed to address these aims:

- What is known from the literature about societal and institutional risk and protective factors for UK undergraduate student mental ill-health?
- What gaps are there in the literature on societal and institutional risk and protective factors for UK undergraduate student mental ill-health?

Methods

The scoping review followed a pre-defined protocol, which outlined the search strategies for locating relevant publications and the criteria for selecting which publications should be included in the review. The search results were limited to publications from the last 15 years, as this coincides with both the tuition fee rise to £3000 p/a and the rise of smart phones and social media. The searching and screening phases of the review were conducted between May and July 2020.

In addition to this, a 'top-and-tail' approach to student engagement (as recommended by Cochrane Training; Pollock et al., 2017) was used. This involved two student consultation meetings, one before the review began to inform the design of the review (e.g. focus, research questions, methods), and one after the findings were synthesised, but before the report was written to contribute to interpreting the findings and identifying recommendations.

The first student was in the final year of her undergraduate degree in International Relations and Global Development and was the BAME representative for Leeds Beckett Students' Union. As of academic year 2020/21 she is the Welfare and Community Officer at the Students' Union. The other student is a recent graduate of a BA in Politics (graduated in 2018) and was the Welfare and Community Officer for Leeds Beckett Students' Union during academic year 2019/20.

The student consultation group was supportive of the focus of the review on societal and institutional risk and protective factors. They thought that this would switch the focus from blaming students for having a lack of "resilience", to examining what universities and society can do to help prevent student mental ill-health. They also thought that it was important that the review retained a broad definition of student mental ill-health, rather than focus on a specific condition, such as anxiety or depression, as student mental ill-health has many strands, and students with multiple or complex needs are common (Pereira et al., 2019). Our student consultation group also emphasised how different the student experience is for undergraduates and postgraduates, and, therefore, believed the review should focus on undergraduates specifically. Finally, the student consultation group agreed that it was important to limit the review to publications from the last 15 years, because they believed the experiences of UK undergraduate students today are different from those of previous generations.

Further information on the methods can be found in Appendix A.

Findings

Overview

The systematic searches identified 13,678 unique references, which, following screening against pre-defined inclusion and exclusion criteria (see Appendix B), resulted in 40 publications for review, which contained between them 44 studies relevant to the review (See Appendix C for a diagram of the search and screening process). Of these 44 studies, 21 were quantitative (using statistical or numerical data), 16 qualitative (using verbal or textual data), and 7 mixed methods (a combination of quantitative and qualitative approaches). Among the quantitative studies, 19 used questionnaires or surveys and 2 used experimental methods. Among the qualitative studies, 1 used a survey, 9 used interviews (e.g. face-to-face, telephone), 4 used focus groups and 2 used multiple methods. Among the mixed methods studies, 4 used interviews and questionnaires, 2 used focus groups and questionnaires, and 1 used a questionnaire with both open- and closed-ended questions. Most qualitative studies used some form of thematic analysis. Eight of the studies used a national sample, covering at least one of the four nations in the UK, 29 of the studies sampled from only one university, three studies sampled from between 2 and 7 universities, and four studies did not specify how many universities they sampled from. Thirteen of the studies looked at UK or British undergraduate students generally, while the other 31 looked at specific sub-groups of students (e.g. nursing students, refugee students). Twenty-seven of the studies took a broad definition of mental wellbeing, stress, or distress, whilst the other 17 looked at one or more specific mental health conditions.

The number of participants was stated in 41 of the studies and ranged from eight to 6,504. The age range of the participants was listed in 19 of the studies and, overall, ranged from 17 to 62.

Thirty-three studies gave the gender distribution of the participants. In three of these, more than half the participants were men, whilst in the remaining 30, more than half of the participants were women. Only two of the studies reported participants of genders other than men or women.

Twenty of the studies reported on risk factors, 11 reported on protective factors and 13 reported on both. Institutional factors were more commonly researched than societal factors. Among the research that looked at institutional factors, several of the studies looked at sub-groups of UK undergraduate students and were interested in risk factors related to a particular course, such as nursing or medicine. Most of the societal factors identified were related to student finance, and only two societal protective factors were identified across the whole review. Figure 2 summarises the main factors identified. The following pages give a detailed account of the findings of the review. Summary tables of the aims, methods, findings and conclusions for each of the 44 studies are included in Appendix D.

Additionally, two relevant summary reports were identified through the screening process; one on international students' mental health (Young Minds, 2006) and another on the support of student mental health (Universities UK, 2018). Neither of these publications focused on institutional or societal risk or protective factors exclusively; however, they may be of interest to readers of this report.

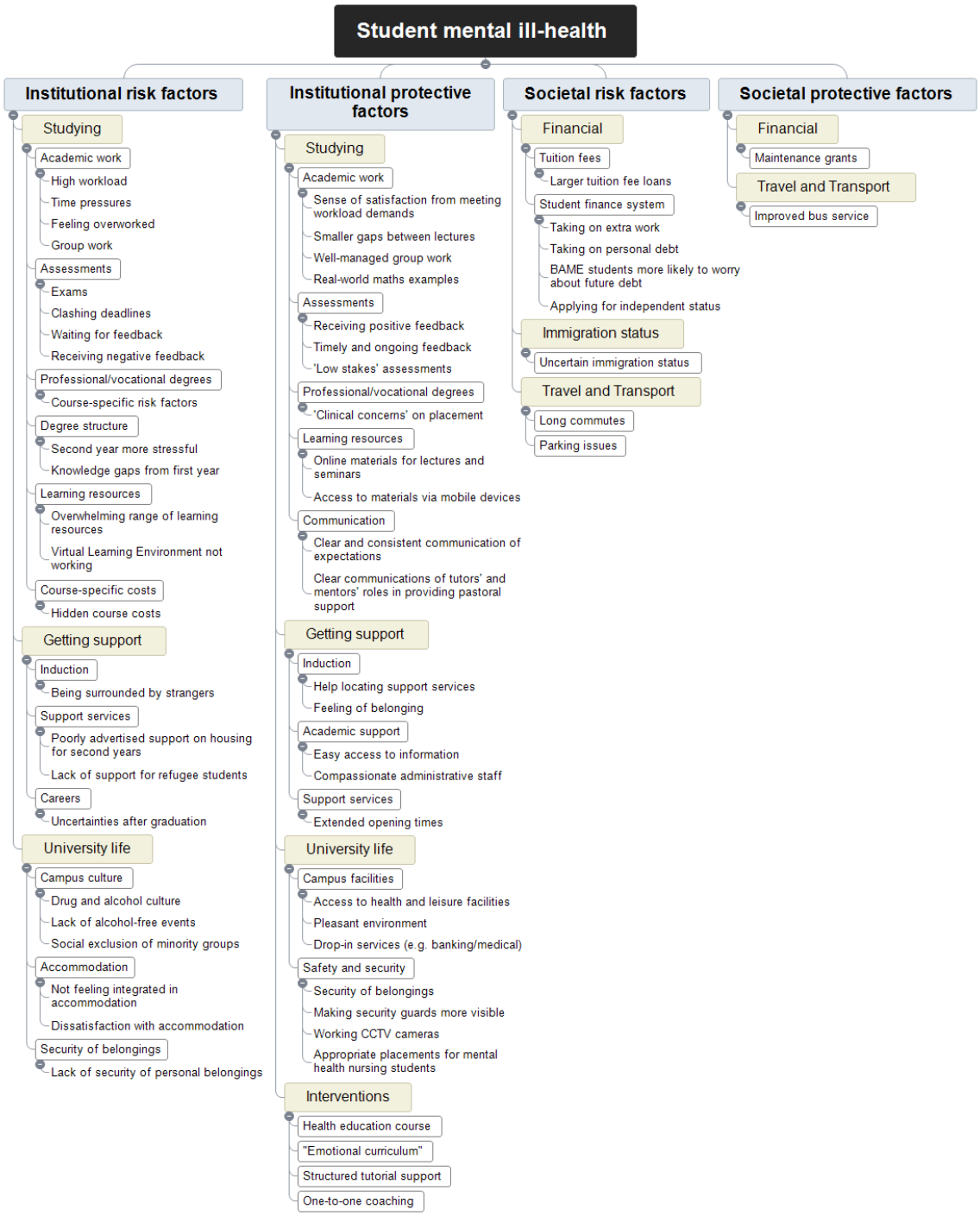


Figure 2: A mind map of the institutional and societal risk and protective factors identified in the review findings.

Institutional risk factors

Studying

Summary

Workload and time pressure lead to stress and worsen mental health.

Exams and clashing deadlines are stressful.

Waiting for feedback and receiving negative feedback are stressful and lead to low mood for many students.

Group work often causes anxiety.

Professional and vocational degrees have course-specific risk factors.

The second year of an undergraduate degree is more stressful than the first year for many students.

A wide range of learning resources can leave students feeling overwhelmed.

Hidden course costs can cause extra stress.

Academic work

A high workload was seen as one of the most challenging aspects of university in terms of mental health (Por, 2005; Rebholz, 2011), particularly among nursing students at one university (Por, 2005). Further, time pressure was significantly associated with course stress and negative wellbeing (Smith, 2019). Music students across six UK conservatoires (specialist providers of education – including undergraduate courses – in performing arts) also described long rehearsals and feeling overworked (Perkins et al., 2017). However, the impact of a high academic workload was not solely negative (see *Academic Work* in *Institutional Protective Factors*).

Additionally, in a study at one university, some participants described how participating in research to earn course credit had led them to feel uncomfortable or distressed (Brewer & Robinson, 2018).

Assessments

Exams were seen as challenging to mental wellbeing, with 81.5% of students at one university feeling depressed or anxious about exams at some point during their studies (Rebholz, 2011). In another study, psychology students described being worried about statistics exams, but often finding them easier than they expected (Ruggeri et al., 2008). Time pressures in exams and assessments, and clashing deadlines were highlighted as being a particularly stress-inducing problem for students at one university (Harris, 2016).

Several studies reported that waiting for feedback, receiving negative feedback on their first assignment, unclear expectations and contradictory advice around assignments, and participating in group work all created additional stress and worry for students (Harris, 2016; Hilliard et al., 2020; A. D. Lewis et al., 2009; Shields, 2015). In one study, 91.5% of students reported feeling depressed, unhappy or anxious at some point during university as a result of worries about coursework (Rebholz, 2011). In another study, 56.6% of students felt anxiety in relation to an "online collaborative project" (group work project) as part of their coursework, mostly due to working with strangers (Hilliard et al., 2020). However, the same study also suggested that if group work is designed well, the experience can be positive (see *Institutional Protective Factors*).

Professional/vocational degrees

Out of veterinary, medical, pharmacy, dentistry, and law students across seven universities, law students reported the lowest levels of mental wellbeing and veterinary students reported the highest (E. G. Lewis & Cardwell, 2019). Some risk factors were very specific to NHS placements;

for example, there were reports of understaffing on nursing placements, as staff were too busy to supervise the student nurses (Galvin et al., 2015; Por, 2005).

Further, 10% of music students surveyed across six UK conservatoires described feelings of anxiety related to performing on stage and described instrumental tuition as feeling like constant criticism (Perkins et al., 2017).

Degree structure

Students described the second year as more complicated than the first year, which in itself was stressful (Harris, 2016; Macaskill, 2018). In addition, students on courses where first year marks were discounted from the final degree classification spent less time studying in their first year, which led to knowledge gaps in their second year, and this exacerbated the stress of second year studies (Macaskill, 2018).

Learning resources

In one study, students described feeling overwhelmed by the amount of information available through the university's Virtual Learning Environment (VLE) and library resources, and struggled to identify relevant information when searching online, which led to frustration and difficulties focusing (Salvagno, 2016). They also experienced distress when dealing with poorly designed website layouts or when the VLE didn't work as expected (Salvagno, 2016). In another study, students rated learning materials and teaching strategies as a source of stress (although this study did not give details as to what this might entail; Gibbons, 2012).

Course-specific costs

Whilst most research on financial problems among students was focused on the impact of student loans (see *Societal Risk Factors*), one study highlighted that the hidden costs for medical students (including clothes for placements, a stethoscope, books, and travel to placements) can cause additional stress (Cohen et al., 2013).

Getting support

Summary

Induction can be more stressful than supporting for some part-time students.

There is a lack of support services available for refugee students' needs.

Careers events can cause anxiety for students who are already uncertain about life after university.

Induction

Some part-time students found being among crowds of strangers at induction events to be stressful, anxiety provoking, and isolating (Goodchild, 2017); however, induction can also improve wellbeing for many students (see *Institutional Protective Factors*). The authors recommended that bespoke induction processes be developed for part-time students to help them overcome anxiety and isolation at the start of their degree (Goodchild, 2017).

Support services

Two groups reported a lack of support available to them. In one study, second year students described how the university offered a lot of support to first year students who were house-hunting, but, although this was still available to second years, it was not well-advertised (Macaskill, 2018). Another study highlighted the experiences of refugee students, who felt that university support services (e.g. legal or mental health support) were particularly under-equipped to meet their specific needs (Jack et al., 2019).

Careers

One study highlighted how students who were unsure about what they wanted to do after their degree felt anxious and guilty at careers events (Macaskill, 2018). The author recommended that careers talks acknowledge and normalise students' concerns about employability and recognise that these issues may be different for students studying for vocational degrees (Macaskill, 2018).

University life

Summary

The lack of alcohol-free social events on campus is a challenge to mental wellbeing.

Minority groups experience social exclusion through intolerant or derogatory remarks going unchallenged.

Feeling that personal belongings are unsafe is a challenge for mental wellbeing.

Dissatisfaction with accommodation is associated with low wellbeing.

Campus culture

In one study, 45.0% of students mentioned the drug and alcohol culture on campus was a challenge to their mental wellbeing, and some students were particularly concerned about the lack of alcohol-free social events on campus (Rebholz, 2011). Additionally, some minority groups experienced social exclusion whilst on campus. For example, religious students described experiences of being "othered" by a campus culture that claims to have a "multicultural ethos", but, in reality, didn't challenge intolerance or derogatory remarks towards them (Stevenson, 2014). Further, for first-year psychology students at one university, the more that social opportunities (e.g. interactive course sessions, social events, clubs and societies) were rated as a source of distress, the less they felt a part of the learning community (Gibbons, 2015).

Accommodation

In a study covering over 100 UK universities, students who scored low on measures of wellbeing were more likely to be dissatisfied with, and not feel integrated in, their accommodation than students who scored in the top 25% for wellbeing (Neale et al., 2016).

However, it is not clear from this study whether the accommodation was university owned or private.

Security of belongings

Security of personal belongings was mentioned as a challenge regarding mental wellbeing in one study, although there were no details as to what this might include (Rebholz, 2011).

Institutional protective factors

Studying

Summary

Some students derive a sense of satisfaction from meeting high workload demands.

Having a fixed timetable with minimal gaps between lectures helps medical students plan their time better and reduce stress.

Well-designed and implemented group work can reduce anxiety in students.

Maths anxiety might be reduced through applied teaching and increased exposure to maths through lectures and homework.

Positive and timely feedback supports student mental wellbeing.

Online materials help students fit their studies around other commitments and boosts mental wellbeing.

Clear communication between staff and students reduces stress and anxiety.

Academic work

In contrast to Por (2005) and Rebholz (2011; see *Institutional Risk Factors*), A. P. Smith (2019) found that higher workloads were associated not only with increased course-related stress, but also, paradoxically, both increased negative wellbeing and increased positive wellbeing. The authors suggested that this finding might be explained by seeing the workload as a stressful experience, but one which students find has positive benefits when they've completed their work.

Medical students reported that if their timetables were better structured by minimising gaps between lectures, they would have more free time and less time pressure during the day (Cohen et al., 2013).

One study reported that students wanted guidance on best practices and communication tools for group work (Hilliard et al., 2020). Activities to help group bonding before the assignment and support from tutors in encouraging the participation of all group members were thought to reduce some of the anxiety (Hilliard et al., 2020). Careful consideration of how group work is marked was also important (Hilliard et al., 2020). In particular, another study reported that medical students thought that group work should be tailored to create a "positive learning experience" to improve wellbeing, although the report did not explain what this might entail (Cohen et al., 2013).

One study exploring maths anxiety in psychology students found that real-world applications, increased exposure to maths through sessions and homework, and less intimidating lectures (by making them less dry and including walkthroughs) were all suggested by the students as ways to reduce their maths anxiety (Thompson et al., 2016).

Assessments

First-year undergraduate students who received positive feedback on their first assignments

described a boost to their self-esteem (Shields, 2015). Ongoing and timely feedback was seen as important to wellbeing among medical students (Cohen et al., 2013). Additionally, "low stakes assessments" (i.e. assessments which have only a small effect on the overall mark) were suggested as a supportive way of providing feedback to first years, in order to help them learn to meet the expectations of academic work (Shields, 2015).

Professional/vocational degrees

In a study of student nurses at one university, there was an unexpected association between higher scores relating to "clinical concerns" on the Student Nurse Stress Index and higher mental health scores, although the causal link between the two is unclear (Pryjmachuk & Richards, 2007). Whilst the authors suggest that this may be due to individual factors associated with coping, it could also be due to differences in experiences on placement, such as having a supportive environment in which to raise their concerns, which in turn leads to mental health.

Learning resources

One study reported that access to online materials for lectures and seminars helped students feel more confident with course content, and having access via mobile devices allowed them to fit their studies around other commitments, both of which, in turn, improved their mental wellbeing (Salvagno, 2016). Students were inclined to see new technologies that allowed them to study 'on-the-go' as resources to help them manage negative emotions and create more time to relax (Salvagno, 2016).

Gibbons (2015) found that first-year psychology students at one university, who rated the university's learning resources, such as the library and IT services, to be an uplifting source of stress ('eustress') were more likely to feel part of the learning community at the university. However, this was a brief report of their findings and there was no further explanation of why this might be the case.

Communication

Clear and consistent communication of expectations from teaching staff and mentors were frequently mentioned as important to reducing stress and anxiety (Cohen et al., 2013; Oates et al., 2020; Salvagno, 2016). Equally important for midwifery and medical students was clear communication of tutors' and mentors' roles in providing pastoral support to manage the emotional aspects of their training (Cohen et al., 2013; Oates et al., 2020).

Getting support

Summary

Induction week helps students feel part of the university and identify useful services.

Extending the opening times of support services may improve wellbeing.

Access to study-related information, compassionate administrative staff and online academic support are all beneficial to student wellbeing.

Induction

Fifty-three percent of students in one study reported that induction week helped them to locate support services they could use (Rebholz, 2011), which would reduce the stress of adapting to a new environment. In the same study, 60.0% of students thought that a refresher week would be useful, possibly suggesting that students didn't retain the information given for long, although they didn't specify when this should take place (Rebholz, 2011). As the later years of university provide different challenges to mental wellbeing (see *Degree Structure* under *Institutional Risk Factors*), students may feel more supported and

less worried if they are reminded of the services available to them.

Whilst some part-time students reported induction to be anxiety-provoking (see *Induction* under *Institutional risk factors*), other part-time students and international students found induction week particularly helpful, with the part-time students reporting that it helped them to feel like they belonged in the university and on their course, and allowed them to get to know other students (Goodchild, 2017; Rebholz, 2011).

Academic support

Having easy access to the information they needed (e.g. journals and books) helped students at one university feel more confident in reaching their goals (Salvagno, 2016). At another university, full-time undergraduate students mentioned the benefits of having compassionate and knowledgeable administrative staff (Houghton & Anderson, 2017).

Support services

In one study, 41.6% of students reported that extending the opening times of support services was important to improving mental wellbeing (Rebholz, 2011); however, it was not clear in the study which support services this was referring to.

University life

Summary

A pleasant environment which supports health and recreation, and drop-in ancillary services are important to student mental wellbeing.

Feeling safe and secure on campus is important to students' wellbeing.

Feeling safe and secure on placements helps students feel more in control and improves student mental wellbeing.

Campus facilities

One study found that over half of students thought that having access to health and leisure facilities on campus (although it is unclear what kinds of facilities this referred to) and "having a pleasant environment" (although it is unclear what this entailed) were important or very important to their mental and emotional wellbeing (Rebholz, 2011). In another study, medical students thought that providing on-campus drop-in services, such as a bank or GP, could potentially improve wellbeing, as otherwise these services were difficult to access given the medical students' schedules (Cohen et al., 2013).

Safety and security

Around three quarters of students in one study reported that feeling safe and protected on campus, and knowing their belongings will be secure, was important or very important to their mental and emotional wellbeing (Rebholz, 2011). Further, over half of students reported that making security guards more visible, increasing security measures generally (although there were no details as to what this might entail), and assuring students that CCTV cameras were working were important or very

important factors to their mental wellbeing at university (Rebholz, 2011).

Additionally, Galvin and colleagues (2015) emphasised the importance of ensuring mental health nursing students were sent to placements suitable for their clinical expertise, so that they felt safe and in control of their work.

Interventions

Summary

Universities have trialled a range of interventions to improve student mental wellbeing, but only some have shown promise.

As this review was focused on primary prevention, intervention studies were included if they targeted all the students in a year group, course or university, rather than specifically focusing on students who were already experiencing mental ill-health.

A health education course for music students appeared to show slightly reduced levels of stress in participants (Matei et al., 2018). A six-week mindfulness course for social work students as a trial of an "emotional curriculum" found participants had improved wellbeing and stress levels compared to controls (Roulston et al., 2018). Two classroom-based interventions to help with maths anxiety among psychology students also showed promise (Thompson et al., 2016). Personal support through mentoring, structured tutorial support and one-to-one coaching all seemed to have positive effects on students' mental wellbeing (Collings et al., 2016; Gammon & Morgan-Samuel, 2005; Lancer & Eatough, 2018).

However, several intervention studies showed little to no effect on students' mental wellbeing. These included paper-based and online versions of a stress management psychoeducation intervention (Harris, 2016) and an email intervention for statistics anxiety among psychology students (Thompson et al., 2016). An intervention study involving mentoring for personal issues during the first semester at university was associated with lower mood and wellbeing; however, the authors highlight that the direction of this relationship is unclear and it may be that students with lower mood and wellbeing used the service more (Collings et al., 2016).

Societal risk factors

Financial

Summary

Larger tuition fees may have long-term implications for graduates' mental wellbeing.

Students who take on extra work to supplement their student loan experience extra stress.

The majority of students worry about their student loans and the future debt they are taking on.

BAME students are more likely to worry about future levels of debt.

Worries around future debt increase around graduation.

The process of applying for independent status with the Student Loans Company, and specifically the requirement to prove estrangement from their parent(s)/guardian(s), is highly stressful.

Tuition fees

Since 1998, the government has set the maximum tuition fees universities can demand (Bolton, 2018; Office for Students, 2019) and these were increased from £3225 p/a to £9000 p/a in the academic year 2012/13 (Bolton, 2018). Whilst one study found that dental students paying the £9000 rate of tuition fees were more likely to experience stress relating to the amount of their student loan and total student loan debt than those paying £3920 (Boyles & Ahmed, 2017), another study, using a national sample, found no evidence of increased tuition fees impacting student mental health (T. Richardson et al., 2015). The authors of the latter study suggest that it may be that the increase in tuition fees limits the recovery of students' mental health over time, rather than causing an immediate negative impact (T. H. Richardson, 2013).

Student finance system

The government has been running a national student loan scheme since 1990 (Bolton, 2019). The amount students can apply for and the interest rates on the student loan are capped by the government (Bolton, 2019); however, the amount loaned is not always enough to cover students' expenses (Bolton, 2019). Meeting basic living expenses was mentioned in two national and one localised study as being particularly problematic for student parents, NHS students, mature students, disabled students, and students who started university aged between 17 and 20 (Gerrard & Roberts, 2006; National Union of Students - Union of Students in Ireland, 2014; National Union of Students, 2012). Owing to these financial difficulties, many students took on part-time work. However, the extra stress related to this appears to have negative effects on mood and wellbeing (Carney et al., 2005; Harris, 2016; Rebholz, 2011).

Over half of students in a national survey in England worried about future levels of debt (it wasn't clear whether these worries were regarding student loans and/or personal loans; National Union of Students, 2012). Students in England who began their course between the ages of 17 and 24, and full-time undergraduates

were most likely to worry (National Union of Students, 2012). A further study conducted by the National Union of Students across students in England in 2015 found that BAME students paying £9000 in tuition fees were more likely to be concerned about the interest on their student loan debt compared to non-BAME students (National Union of Students, n.d.)[1].

If we also consider the effects of taking on personal debt to cover the deficit in government funding, one study at a Scottish university found that being in debt had a small but statistically significant negative effect on student mental wellbeing (Carney et al., 2005). Worries around debt appeared to increase closer to graduation in one national survey of students (T. Richardson et al., 2015), and 80.0% of students in the 2015 National Union of Students study referred to above (who paid the £9000 rate of tuition fees) were worried about their student loan debt in the run up to graduation (National Union of Students, n.d.).

In fact, between 55.0% and 73.0% of students in a national sample of students in England reported worrying about their financial situation (National Union of Students, 2012), and in another study, 85.2% of students reported feeling depressed, unhappy or anxious as a result of money problems at some point during university (Rebholz, 2011). One study with a national sample found that students' financial difficulties increase the risk of developing psychosis (T. Richardson et al., 2018).

Lastly, one of the studies focused on a small, but national, sample of students applying for independent status with the Student Loans Company or Local Education Authorities (LEAs; who were also involved in the student finance process when the study was conducted). Smith and Malcolm (2008) found that the process of securing independent status was often insensitive and dangerous for the students, requiring that they contact their estranged parents for "proof".

Immigration status

Summary

Having an uncertain immigration status leads to anxiety and stress.

One study highlighted that, for refugee students, having an uncertain immigration status directly or indirectly affected their wellbeing, with students reporting anxiety and stress related to their legal status (Jack et al., 2019).

Travel and transport

Summary

Long commutes and parking issues can cause stress for students.

Part-time students in one study described having to travel long distances to university, although no further details on this point were included (Goodchild, 2017). Students in another study mentioned that problems parking near university could be stressful (Rebholz, 2011).

Societal protective factors

Financial

Summary

Students who received maintenance grants (which are no longer available) were less likely to worry about their student debt.

[1] Although the data for this source was collected in 2015, it is not clear when the source was published; hence the use of n.d. (no date).

Student finance system

After briefly being available in 1998, maintenance grants were reintroduced by the government in 2004, and then scrapped again in 2016 (Bolton, 2019). A national survey conducted by the National Union of Students in England in 2015 found that among the first intake of students paying £9000 in tuition fees, those with maintenance grants were statistically less likely to worry about their student debt than those without (National Union of Students, n.d.).

Travel and transport

Summary

Improving public transport is important to student mental wellbeing.

A study at one university found that 72.2% of students reported that improving the bus service was important or very important to their mental wellbeing (Rebholz, 2011).

Limitations identified within the reviewed studies

The study authors reported several limitations to their research. Many studies reported using a small or non-randomised sample, and a cross-sectional design (i.e. the study was conducted at one moment in time and did not assess how the findings changed over time). Several of the studies acknowledged that they had used statistical tests inappropriately, and several reported a risk of non-response bias (responders differed in a systematic or meaningful way from non-responders) or attrition bias (people dropping out of the study differed in a systematic or meaningful way from those who continued).

Further research recommended within the reviewed studies

The study authors suggested several topics for further research. These included group work in blended learning contexts; how factors affecting student mental health differ at different types of universities (e.g. Russell Group universities or post-1992 universities), the impact of student accommodation on mental health, and monitoring the ongoing impact of tuition fees on student mental health.

The study authors also made suggestions on how to conduct future research. These included using larger or broader samples of students; although, there were several studies which suggested researching specific sub-groups or cohorts of students (e.g. lone parents, students at different types of universities), or the importance of including the voices of marginalised groups. Further, several authors called for longitudinal research (conducting the research over a prolonged period of time) and conducting studies with longer follow-up periods.

Student consultation

We shared a draft of the review findings with our student consultation group. The students felt that the findings resonated with their own experiences and those that they had heard other students talk about in their roles as Students' Union officers.

The students were particularly interested to see that campus culture (especially the prevalence of drugs and alcohol) had been flagged up as a significant contributor to mental health problems, and they thought that this has been, and continues to be, a major issue for the students they work with.

The students emphasised the importance of further research into "lad culture", students from liberation/minority backgrounds, whether

different minority groups have different concerns and mental health issues (e.g. the trans community is often subsumed under LGBT+, but may have different needs/concerns), and the impact of accommodation costs.

They suggested that (where possible) data collection should be undertaken by people from similar backgrounds or with similar experiences to the participants; for example, focus groups with BAME students being conducted by a BAME student (although, researchers should still acknowledge the limitations of their experiences). This will help to build trust with researchers, particularly when students might lack trust in the university more generally. The students also highlighted that students' participation in research should be appropriately acknowledged and compensated, that the benefits of the research to the student population should be clearly articulated and that care should be taken not to retraumatise students who have had difficult mental health experiences.

Lastly, we discussed how a number of studies had to be excluded from the review because they did not report the findings for undergraduates and postgraduates separately. The students thought that it is important for researchers to report findings for undergraduate and postgraduate students separately in future. Based on their discussions with students, and with colleagues in mental health support roles, they perceive that undergraduate and postgraduate students tend to face quite different mental health issues and the factors affecting these could be different for each group.

Conclusions

This review aimed to describe what is currently known about societal and institutional risk and protective factors for UK undergraduate student mental ill-health and identify the gaps in the literature. Systematic searches identified 13,678 unique references, which, following screening against pre-defined inclusion and exclusion criteria, resulted in 40 publications for review.

The review identified a number of institutional risk factors for student mental ill-health, centring around studying, getting support and university life. These studies indicated that high workload and time pressure, clashing deadlines, exams, group work, waiting for feedback, and receiving negative feedback could contribute to stress and lower mental wellbeing. Professional and vocational degrees brought additional challenges specific to their discipline, such as safety on placements. For many students, the second year was more stressful than the first and a wide range of learning resources left students feeling overwhelmed. The review also identified hidden course-costs (e.g. clothes for placements) as causing extra stress for some students. Aside from studying, refugee students found support services (such as legal or mental health support) inadequate for their complex needs and induction and careers events led to anxiety for a minority of students. In wider university life, it was noted that there were few alcohol-free events organised on campus, and alongside this, some minority groups experienced exclusion and discrimination. A lack of security of personal belongings was also identified as stressful for some students and dissatisfaction with accommodation was associated with low wellbeing.

Fewer publications included institutional protective factors than institutional risk factors. These institutional protective factors included a sense of satisfaction from meeting workload demands, positive assessment feedback that was supportive and motivational, well-designed group work, clear communication, applied teaching in maths classes, online materials to help students study flexibly, and well-structured timetables. Further, most students found induction to be supportive. Having easy access to information via library resources and the VLE, and compassionate administrative staff were also beneficial. The review also found that having longer hours for support services and drop-ins (e.g. for banking services) may be beneficial to student wellbeing. More broadly, a pleasant, safe environment with access to health and recreation facilities, and feeling safe and secure on campus and during placements were also thought to improve student mental wellbeing. Whilst several interventions had been trialled by universities to support the mental wellbeing of their students, some of these had limited or no positive effects on wellbeing.

A modest number of societal risk factors were identified in the review, mostly relating to tuition fees and the student loans system and their consequent financial impact on students. Whilst most students worry about their finances, several studies identified particular hardship among minority groups, such as BAME students and student parents. Other policies also affected student mental wellbeing, such as applying for estrangement status with the Student Loans Company and determining immigration status for refugee students. Additionally, poor travel and transport facilities can cause stress.

Only two societal protective factors were identified: good public transport and being in receipt of a maintenance grant. However, maintenance grants are no longer available in the current system (Bolton, 2019).

Although this review has identified a number of potential risk and protective factors for UK undergraduate student mental ill-health, it is not clear how much each of these factors

contributes. Whilst some of these factors might have a large impact (e.g. uncertain immigration status), others might have a smaller impact (e.g. difficulties parking on campus). It is important to note that the impact of each of these factors might vary between different students, and particularly among minority groups; for example, difficulties parking on campus might have a greater impact on a student who uses a wheelchair, than a student who can comfortably walk the extra distance.

It is also important to note that not all the factors identified in this report have the same degree of evidence in support of them. The evidence for some factors is based on as little as one question on a survey to a sample of students from one university, whilst evidence for other factors is based on more than one nationwide study with thousands of participants (see Appendix D). Although the next section discusses the gaps we have identified in the literature, there is still further research needed into many of the factors identified above.

Gaps in the research

The gaps in the existing knowledge base can be summarised as follows: (1) there is less research on societal factors than institutional factors; (2) among the research on institutional factors, there is less research on institutional policies (e.g. social media and email policies, equality and diversity), facilities (e.g. campus childcare), environments (e.g. social spaces, green spaces), and cultures (e.g. inclusivity, norms around sexual harassment within the university community) than teaching, learning, and assessment; (3) among the research on societal factors, there is less research on structural inequalities (e.g. sexism, racism, social class), social policies (e.g. austerity, policies around alleviating poverty, environmental policies, initiatives to reduce crime), or the towns and cities in which the universities are located (e.g. ethnic diversity, LGBT+ culture, student integration) than tuition fees and the student finance system.

It is important to note that some of the factors which have not been researched to date in solely UK undergraduate students have been researched in either: (a) general UK student samples, with no separation of the findings for undergraduates and postgraduates (e.g. Akel, 2019; Gnan et al., 2019; Madriaga, 2007; Molodynski et al., 2020; Smithies & Byrom, n.d.), or (b) non-student samples, focusing instead on the views or experiences of university staff, or the analysis of policy documents (e.g. British Property Federation, n.d.; Divaris et al., 2008; Goodman & Loverseed, 2012). Although studies that combined the findings for undergraduates and postgraduates, or that focused on non-students, were not eligible for inclusion in the review, the topics covered in those studies (such as student accommodation, “lad culture”, sexual harassment, crime, LGBT+ harassment and racism) suggest possible avenues for further research in undergraduates specifically. Undertaking a targeted review of these studies might, therefore, be fruitful.

Strengths and limitations of the studies

Across the studies, a range of methods were used, with quantitative studies providing breadth and qualitative studies providing depth to the findings.

Unfortunately, however, as many of the studies were limited to students at one institution, it is difficult to say with certainty whether these findings can be generalised across HEIs in the UK. Equally, many of the studies focused on a subgroup of students (e.g. student parents, religious students) and these findings may not be generalisable to other student sub-groups.

Strengths and limitations of this review

This review has synthesised a broad range of research from a variety of sources, which were identified through systemised and multiple

searching techniques. It has followed PRISMA reporting guidelines for scoping reviews (Tricco et al., 2018), for transparency and replicability. It has also included a student consultation group in the review process and identified significant gaps in the literature.

In line with the remit of a scoping review, each study was not formally assessed for quality using a quality assessment tool, although limitations of the research identified by the study authors were extracted and summarised, and the review authors' general observations on limitations of the existing research have also been reported.

Recommendations for future research

Based on the findings from this review, and our student consultation group, we make 10 recommendations for further research into institutional and societal risk and protective factors for student mental ill-health in the UK; these are summarised on the next page.

RECOMMENDATIONS FOR FUTURE RESEARCH

Research Areas

Future research should consider:

1. the impact of campus culture (e.g. institutionalised racism, diversity of the student population, norms around drug and alcohol use), university policies (e.g. around diversity and inclusion, social media and communication, or student complaints), university facilities (e.g. health and leisure centres), and university environments (e.g. green spaces) as institutional factors which may affect undergraduate student mental ill-health in the UK;
2. the impact of societal factors, such as national or regional policies and laws (e.g. austerity policies, the expansion and marketisation of Higher Education, and the impact of the Higher Education and Research Act 2017), structural inequalities (e.g. sexism, racism or social class), cultural norms (e.g. around social media, sexual harassment) and aspects of local environments or communities (e.g. how welcoming the local community are to students, or to members of marginalised groups) on UK undergraduate students;
3. both risk and protective factors for mental ill-health;
4. the relative importance of the factors identified in this review and which areas impact on student mental ill-health the most.

Research Design

5. "Nothing about us without us": future research should continue to focus on or include the perspective of current undergraduate students.
6. Future research should not be solely limited to specific courses or sub-groups, but should also consider broader issues affecting all/the majority of UK undergraduate students.
7. Future research should compare across UK universities to identify best practices and "what works".

Conducting Ethical Research

8. Future research should not underestimate the importance of building trust with participants (e.g. through ensuring that researchers and participants have shared backgrounds or experiences, or adopting participatory approaches), appropriately acknowledging and compensating students' participation, clearly articulating the benefits of the research to the student population, and ensuring that research does not retraumatise students who have had difficult mental health experiences previously.

Reporting Findings

9. Findings for undergraduate and postgraduate students should be reported separately, as their experiences are likely to be different, possibly in nuanced ways.
10. Future research should recognise that different groups may have different needs and concerns (e.g. trans students may have different needs and concerns to LGBT+ students more generally) or may be affected differently by the factors being researched. It would therefore be beneficial to report findings for these groups separately.

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Appendix A: Methods

Protocol and registration

A protocol for the review was developed, which was reviewed by the Chair and trustees of It's Our Day. The protocol was not pre-registered. A copy of the protocol is available on request.

Eligibility criteria

Eligibility criteria for articles included in the review were determined *a priori*. The criteria were developed using the SPIDER tool (Cooke et al., 2012) and are as follows: (1) Sample: UK undergraduate students; (2) Phenomenon of Interest: Student mental ill-health; (3) Design: Studies from the past 15 years, focusing on undergraduate UK students in general or specific cohorts of undergraduate students, excluding studies which have solely or specifically selected students with pre-existing diagnosed or undiagnosed, or sub-clinical presentations of mental health conditions; (4) Evaluation: Risk and protective factors relating to the societal and institutional levels of the social-ecological framework; (5) Research type: Empirical peer-reviewed research and grey literature. For a detailed breakdown of the inclusion and exclusion criteria, along with rationales for each, see Appendix B.

Information sources

Three search strategies were used to identify potentially relevant studies: database searching, Google searches, and screening reference lists of known and included studies.

Search

MH searched Scopus, PsycINFO, PsycARTICLES, CINAHL, MEDLINE, ERIC, Open Dissertations, Open Grey, EThOS, DERA, and Research into Higher Education Abstracts between 20/05/20 and 10/06/20. Search terms were developed by the research team and combined with terms from related reviews and suggestions from the student consultation group. Date limiters (2005-present) were applied where possible. The techniques used to limit the search to UK-focused research (i.e. where the participants were studying at a UK university) were different for each database, as "country" fields in some databases can refer to the location of the researchers, the research, or the funders, depending on the database. Following best practice advice for specific databases (where available), the limits were implemented as described in Table 1. The final search strategy for PsycINFO is documented in Appendix E. This strategy was adapted for each database and simplified where necessary to accommodate database or search engine requirements. Scopus returned a very large number of results initially. The additional search term "AND NOT (ABS ({university press}))" was therefore included to filter out abstracts where the term 'university' was being used to refer to the publisher rather than the study population or setting. In addition, NOT searches were used to identify search terms that produced many irrelevant results and did not contribute any new relevant results over-and-above those produced by the remaining search terms; as a result, "level", "society", and "condition*" were removed from the search terms for Scopus.

Table 1: Strategies used in each database to limit the results to UK-focused research

Database	Search title and keywords field	Search abstract field	Index term	MeSH heading	Country limiter	No limiter available – all results screened
Scopus					✓ (including undefined)	
PsycINFO	✓	✓	✓			
PsycARTICLES	✓	✓	✓			
CINAHL	✓	✓		✓		
MEDLINE	✓	✓	✓	✓		
ERIC	✓	✓	✓			
Open Dissertations	✓	✓				
Open Grey					✓	
EThOS						✓
DERA						✓
Research into HE Abstracts						✓

MH undertook the Google searches between 27/5/20 and 7/6/20. Searches using Google require a different strategy to database searches, as Google is a search engine, not a database. Rather than combining all search terms together, Google searches use broad search terms for each concept (e.g. "student mental health social-ecology"), and then combine these into multiple search strategies, using one term from each topic (Godin et al., 2015). To do this systematically, every possible combination of the search terms is used and each search is documented. The broader terms from those used for database searching were identified and used to develop a systematic Google search strategy. Each combination of terms was searched and the first 50 results for each search were screened. Additional searches were conducted on three websites recommended by the student consultation group: www.nus.org.uk, www.studentminds.org.uk, and www.mind.org.uk. These searches were similar to the Google searches but were conducted for the specific sites and had surplus search terms removed. For example, no search terms relating to students/university were included in the searches on www.nus.org.uk, because it was reasonable to assume that they would all be related to students/university. A full list of the searches conducted is available in Appendix F.

The reference lists of known publications (Hughes & Spanner, 2019; Pereira et al., 2019) were screened on 28/5/20 and included in the general screening process.

The reference lists of included publications were screened between 21/7/20 and 25/7/20. The full details of any potentially relevant references were obtained and added to an Endnote database. These were then screened according to the same procedure as the original references.

Selection of sources

The references identified through database searching, Google searching and screening reference lists were de-duplicated according to Bramer and colleagues (2016). The titles and abstracts of the unique references were screened by MH against the review inclusion/exclusion criteria using Rayyan (Ouzzani et al., 2016). References which did not clearly meet the inclusion or exclusion criteria were grouped according to the reasons for uncertainty. These reasons were then discussed with TTM and KM and a consensus about their suitability for inclusion or exclusion was reached. Full texts of the potentially relevant publications were then obtained and screened again against the inclusion/exclusion criteria in Endnote. Uncertainties were resolved using the same procedure. See Appendix C for the PRISMA Flow Diagram for this review (Moher et al., 2009).

Data charting process

Google Forms was used to chart the data from the included studies. The form was developed based on the information of interest laid out in the protocol and then piloted and revised. MH extracted the data for all of the studies. Where publications contained multiple studies, these were extracted separately.

Data items

Data were charted relating to bibliographic characteristics (number of studies in the publication, American Psychological Association [APA] citation, study title, Digital Object Identifier [DOI], URL); study characteristics (funding, research aims, research questions, hypotheses, how mental health was operationalised, methodology, data collection methods, data analysis methods); participant characteristics (sample description, number of universities sampled, number of participants meeting the review criteria, gender of participants meeting the review criteria, age of participants meeting the review criteria); findings (societal risk factors, societal protective factors, institutional risk factors, institutional protective factors); and conclusions (societal risk factors, societal protective factors, institutional risk factors, institutional protective factors, study limitations, suggestions for future research). A copy of the data charting form is available on request.

Synthesis of results

After data extraction was complete, the findings were grouped topically within the broader categories of institutional risk factors, institutional protective factors, societal risk factors, or societal protective factors, using MindView (mind-mapping software). This mind map was then used as a structure for the narrative synthesis.

Student consultation group

Involving stakeholders in research is known to benefit the quality and relevance of reviews (Pollock et al., 2017). For this reason, we decided to consult with students about whether the review reflected what was important to them. We used a “top-and-tail” approach, meaning that we met with the students during the planning stage of the review, and also after the main findings had been identified (Pollock et al., n.d.). This meant that the students could help shape the design of the review and inform the interpretation of the findings, conclusions, and recommendations.

We had initially hoped to recruit around four to six students, with a range of genders, and degrees being studied. Unfortunately, recruitment proved difficult, partly due to the timing of holidays and exams in early 2020. In the end, two students volunteered, with the consultation meetings taking place on 6/3/20

(whilst the protocol was still in development) and on 13/08/20 (once the initial findings were available, but before the report was written).

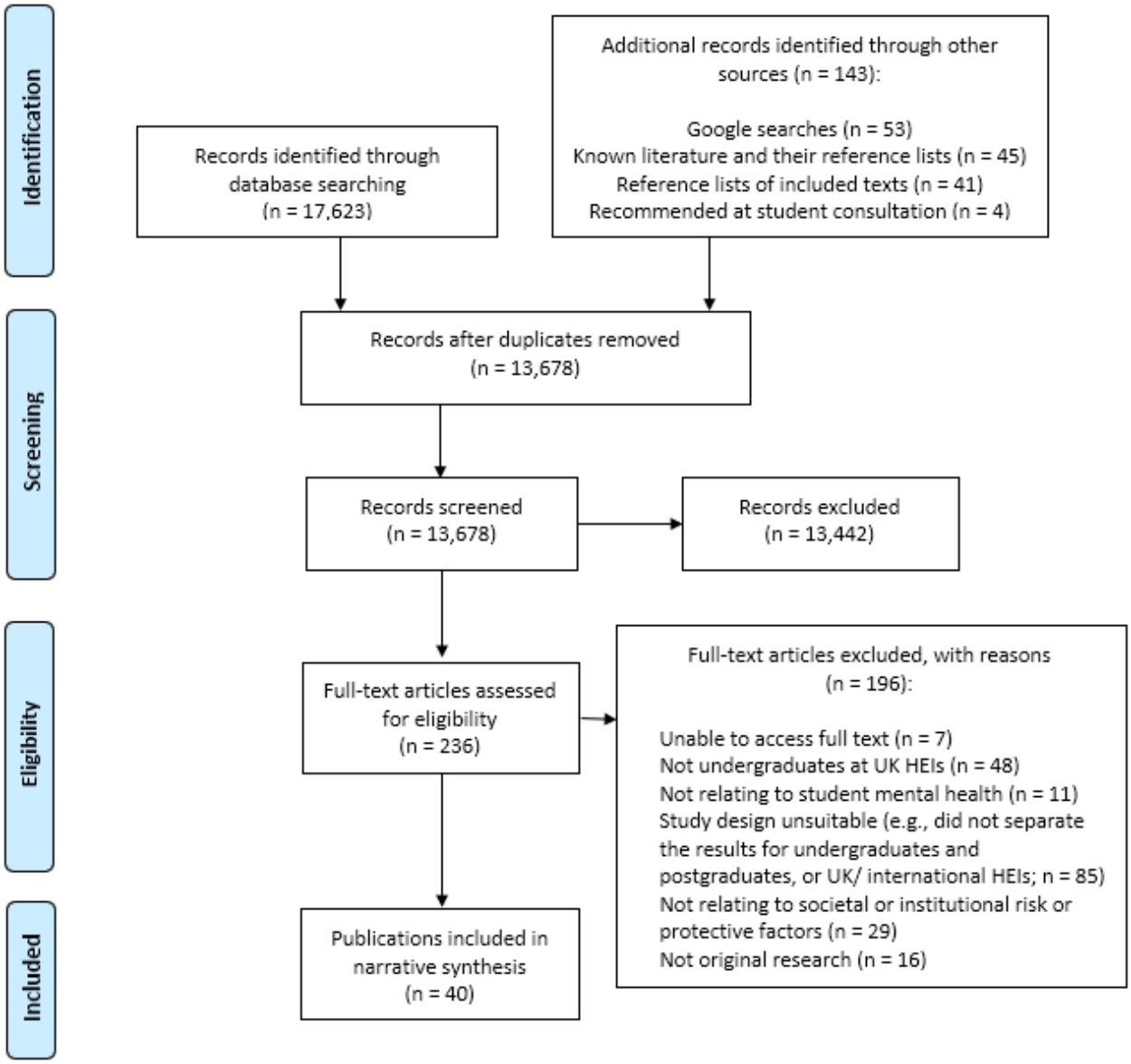
The two students were Pango Simwaka, who was in the final year of her undergraduate degree in International Relations and Global Development and the BAME representative for the Students' Union at the time of our first meeting (as of academic year 2020/21, she is the Welfare and Community Officer at the Students' Union); and Jess Carrier, who is a recent graduate of a BA in Politics (graduated in 2018) and was the Welfare and Community Officer for the Students' Union during the academic year 2019/20 (at the time of our first meeting).

Appendix B: Inclusion and exclusion criteria

	Details	Include	Exclude	Rationale
Sample	UK undergraduate students	● undergraduate students who are studying at UK HEIs	● postgraduate students ● students studying at HEIs outside of the UK	The UK education system is different from those in other countries and provides unique experiences and challenges for students (Schultz, 2019). The social situations of undergraduates are often significantly different to those of postgraduate students (Woolston, 2019)
Phenomenon of Interest	Student mental ill-health	● diagnosed psychological conditions ● undiagnosed psychological conditions which might meet the criteria for diagnosis if assessed, or alternatively sub-clinical presentations of distress		This review conceptualises mental health as a continuum, and, therefore, will not be limited to diagnosed mental illness, but will also consider undiagnosed mental distress regardless of whether this would meet clinical criteria.
Design	Studies from the past 15 years focusing on undergraduate UK students in general or specific cohorts of undergraduate UK students, excluding studies which have solely or specifically selected students with pre-existing	● studies on undergraduate UK students in general or specific cohorts of undergraduate UK students (e.g., women, international students, freshers) ● any qualitative, quantitative, or mixed methods designs ● research published in 2005 or later	● studies which have solely or specifically selected students with pre-existing diagnosed, undiagnosed, or sub-clinical presentations of mental health conditions ● research published in 2004 or earlier ● research which does not report on the outcomes for undergraduate and	The review will be limited to research published in the last 15 years. This is around the time that smartphones and social media became more common (Jarvis, 2017)and roughly coincides with the first increase in tuition fees to £3000 per year, meaning a large increase in student debt (Bolton, 2018). The review will exclude studies which are solely or specifically interested in pre-existing mental illness because of

	diagnosed, undiagnosed, or sub-clinical presentations of mental health conditions			postgraduate students separately ● research which does not report on the outcomes for students at UK HEIs and students in other countries separately	the focus on primary prevention. However, studies which include participants with pre-existing mental illness as part of a wider population would be included in the review.
Evaluation	Risk and protective factors relating to the societal and institutional levels of the social-ecological framework	● societal risk factors ● societal protective factors ● institutional risk factors ● institutional protective factors		● relational risk factors ● relational protective factors ● individual risk factors ● individual protective factors	Initial scoping searches identified considerable research regarding mental ill-health interventions for individual students (e.g. Farrer et al., 2013; Howell & Passmore, 2019; Ma et al., 2019), which affect the individual and relational levels of the social ecology. There is less consideration of what can be done by universities and society as a whole to improve student mental health. Because of this, the review will focus on the social and institutional levels of the model.
Research type	Empirical peer-reviewed research and grey literature	● peer-reviewed original research ● non-peer-reviewed original reports ● books and book chapters with original research ● postgraduate dissertations ● conference proceedings		● reviews ● books and book chapters containing research previously reported elsewhere	Grey literature (research which has not been published through peer-reviewed publications such as journals or academic books; Boland et al., 2017)will be included, as we recognise that universities, student unions and charitable or campaign organisations will have relevant reports, whilst not necessarily being in a position to publish these in peer-reviewed journals. The review will exclude other reviews on related topics, although any found will be highlighted in the report.

Appendix C: PRISMA flow diagram (Moher et al., 2009)



Appendix D: Summary tables for included studies

Aims

Citation	Study title	Publication Format	Funding	Area of student mental health	Research aims	Research questions	Hypotheses
Boyles & Ahmed (2017)	Does student debt affect dental students' and dentists' stress levels?	Journal article	not included	stress	determine whether student debt has any noticeable effect on student stress levels	not included	not included
Brewer & Robinson (2018)	'I like being a lab rat': Student experiences of research participation	Journal article	not included	distress	investigate student experiences of research participation and distress in order to inform future practice	not included	n/a
Carney, McNeish, & McColl (2005)	The impact of part time employment on students' health and academic performance: A Scottish perspective	Journal article	not included	mental wellbeing	determine the ways in which indebtedness and part-time work influence students' physical and mental well-being.	not included	not included
Cohen et al. (2013) [a]	Factors that impact on medical student wellbeing -- Perspectives of risks	Report	The research is being led by Cardiff University in collaboration with Leicester Medical School and the GMC. The GMC are	wellbeing	develop a tool for UK medical schools that could be used to understand and enhance student support specific to their own students' needs and concerns	not included	n/a

			funding the project.				
Cohen et al. (2013) [b]	Factors that impact on medical student wellbeing -- Perspectives of risks	Report	not included	wellbeing	develop a tool for UK medical schools that could be used to understand and enhance student support specific to their own students' needs and concerns	not included	not included
Collings, Swanson, & Watkins (2016)	Peer mentoring during the transition to university: Assessing the usage of a formal scheme within the UK	Journal article	not included	negative affect, stress, wellbeing	evaluate peer mentoring satisfaction and contact with regard to outcome measures of integration and well-being	not included	not included
Galvin et al. (2015)	Mental health nursing students' experiences of stress during training: A thematic analysis of qualitative interviews	Journal article	not included	stress	not included	not included	n/a
Gammon & Morgan-Samuel (2005)	A study to ascertain the effect of structured student tutorial support on student stress, self-esteem, and coping	Journal article	not included	stress	investigate and quantitatively measure the psychological effects of structured tutorial support on students' level of stress	not included	students who are given structured tutorial support [will] experience less stress

Gerrard & Roberts (2006)	Student parents, hardship, and debt: A qualitative study	Journal article	not included	financial worry	investigate the consequences of financial hardship on the health of student parents	not included	n/a
Gibbons (2012)	Stress, positive psychology and the National Student Survey	Journal article	not included	distress, eustress	explore stress and coping in first-year psychology students	not included	significant correlations between the student experience rated as sources of potential eustress and distress and satisfaction and motivation, and between personality, self-efficacy, control, support and coping style with satisfaction, motivation and feeling part of a learning community.
Gibbons (2015)	Stress, eustress and the National Student Survey	Journal article	not included	eustress, stress	address the lack of evidence regarding the NSS and feeling part of a learning community and the experiences associated with levels of stress and eustress	not included	significant positive correlations [will occur] between the student experiences rated as potential eustress (uplifting ratings) [...] feeling part of a learning

							community; and significant negative correlations [will occur] for the distress (hassle ratings)
Goodchild (2017)	Part-time students in transition: Supporting a successful start to higher education	Journal article	not included	anxiety, stress	understand the early transition experiences of a particular group of part-time students	not included	not included
Harris (2016) [a]	The relationship between stress and retention within science undergraduates, their use of support and the potential remedial effect of stress education	Thesis	not included	stress	understand whether retention could be improved by modifying the students' ability to understand and cope with stress	Is there a link between stress and student withdrawal which could be exploited to improve both student wellbeing and continuation through the use of an intervention?	not included
Harris (2016) [b]	The relationship between stress and retention within science undergraduates, their use of support and the potential remedial effect of stress education	Thesis	not included	stress	explore stress across a full trimester	What is the level of stress reported by non-health professional BSc students at the host university and how does it compare to available literature on students undertaking health professional BSc studies?	n/a

Hilliard, Kear, Donelan, & Heaney (2020)	Students' experiences of anxiety in an assessed, online, collaborative project	Journal article	not included	anxiety	not included	What are students' perceived reasons for anxiety in an online collaborative project? What can be done to reduce undue anxiety, and support those who are experiencing it, in online collaborative projects?	not included
Houghton & Anderson (2017)	Embedding mental wellbeing in the curriculum: Maximising success in higher education	Report	not included	mental wellbeing	identify how the mental wellbeing of students can be promoted in a learning and teaching context and gain insight into how teaching and learning activities can complement those of student services, as part of a broad 'whole university' approach	not included	n/a
Jack, Chase, & Warwick (2019)	Higher education as a space for promoting the psychosocial wellbeing of refugee students	Journal article	The author(s) received no financial support for the research, authorship and/or publication of this article.	wellbeing	investigate how well a single higher education institution was perceived to be meeting the psychosocial support needs of refugee students and identify how the HEI might better promote	NA	n/a

					refugee students' psychosocial well-being.		
Lancer & Eatough (2018)	One-to-one coaching as a catalyst for personal development: An Interpretative Phenomenological Analysis of coaching undergraduates at a UK university	Journal article	not included	wellbeing	explore the personal growth of undergraduates who volunteered to participate in one-to-one coaching sessions over one year	not included	n/a
Lewis & Cardwell (2019)	A comparative study of mental health and wellbeing among UK students on professional degree programmes	Journal article	not included	depression, distress, mental wellbeing, suicidal ideation, suicide attempts	estimate and compare the prevalence of mental ill-health and wellbeing in UK students studying law with those studying veterinary medicine, medicine, pharmacy and dentistry	not included	mental health and wellbeing [will] vary significantly across the different student populations; veterinary students [will] experience poorer mental health and wellbeing than the other student groups
Lewis et al. (2009)	A comparison of course-related stressors in undergraduate problem-based learning (PBL) versus	Journal article	not included	stress	investigate whether there are differences in course-related stressors reported by medical students on undergraduate problem based	not included	not included

	non-PBL medical programmes				learning (PBL) and non-PBL programmes in the UK		
Macaskill (2018)	Undergraduate mental health issues: The challenge of the second year of study	Journal article	not included	stress	examine in some depth the student experience of their second year of study and better understand the increased anxiety levels in second year students	not included	not included
Matei, Broad, Goldbart, Ginsborg (2018)	Health education for musicians	Journal article	This research was supported by Musical Impact, a Conservatoires UK project funded by the UK's Arts and Humanities Research Council (grant ref. AH/K002287/1).	stress	assess the effects of the health education course on emotional state and perceived stress	not included	not included
National Union of Students (2012)	The pound in your pocket: Survey results: Interim report	Report	not included	financial worry	better understand the financial pressures facing students today	not included	not included
National Union of Students (n.d.)	Debt in the first degree: Attitudes and behaviours of the first £9k fee paying graduates	Report	not included	financial worry	capture the views of students who were eligible to pay tuition fees of up to £9,000	not included	not included

National Union of Students – Union of Students in Ireland (2014)	Pound in your pocket: Financial wellbeing of further and higher education students in Northern Ireland	Report	not included	wellbeing	create a detailed picture of the financial situation of students in Northern Ireland	not included	not included
Neale, Piggott, Hansom, Fagence (2016)	Student resilience: Unite students insight report	Report	Data collection costs funded from a grant received from Health Education England.	mental wellbeing	not included	not included	not included
Oates et al. (2020)	'The rollercoaster': A qualitative study of midwifery students' experiences affecting their mental wellbeing	Journal article	not included	mental wellbeing	answer the research question	What is it like to be a midwifery student, from the perspective of their mental wellbeing?	n/a
Perkins et al. (2017)	Perceived enablers and barriers to optimal health among music students: A qualitative study in the music conservatoire setting	Journal article	The research reported in this article was supported by Musical Impact, a Conservatoires UK project funded by the United Kingdom's Arts and Humanities Research Council (grant ref. AH/K002287/1).	mental wellbeing, stress	identify students' perceptions of enablers and barriers to their optimal health within the conservatoire setting with emphasis not on the environments in which conservatoire students study and perform	How do music students in the United Kingdom perceive the enablers and barriers that they experience in relation to their health and wellbeing while studying at a conservatoire?	n/a

Por (2005)	A pilot data collecting exercise on stress and nursing students	Journal article	not included	stress	explore the link between the working environment and occupational stress among groups of nursing students following three registration nursing programmes at one large inner-city school of nursing	What causes perceived occupational stress in nursing students undertaking registration programmes in the branches of adult, child, and mental health nursing?	not included
Pryjmachuk & Richards (2007)	Predicting stress in pre-registration nursing students	Journal article	not included	stress	determine what factors predict stress in pre-registration nursing students	not included	not included
Rebholz (2011) [a]	Promoting mental health: Students' perspectives and experiences of a university environment	Thesis	not included	mental wellbeing	contribute to the knowledge and understanding of students' mental wellbeing within a university environment, from the student perspective	not included	n/a
Rebholz (2011) [b]	Promoting mental health: Students' perspectives and experiences of a university environment	Thesis	not included	mental wellbeing	contribute to the knowledge and understanding of students' mental wellbeing within a university environment, from the students' perspective	not included	not included
Richardson (2013)	Student mental health: A prospective cohort study of the	Thesis	not included	anxiety, depression, eating	assess the impact of the fees increase on student mental health	not included	those paying increased fees will show poorer

	impact of increased tuition fees			disorders, global mental health, psychosis, stress			mental health after controlling for potential confounding variables; [in] both cohorts financial variables such as personal debt and financial stress will predict symptom severity
Richardson et al. (2018)	Financial difficulties and psychosis risk in British undergraduate students: A longitudinal analysis	Journal article	This work was funded by Doctorate in Clinical Psychology funding through the UK National Health Service and Research Capability Funding from the UK National Institute for Health Research.	psychosis	examine the relationship between financial difficulties and psychosis in British undergraduate students	not included	not included
Richardson, Elliot, & Roberts (2015)	The impact of tuition fee amount on mental health over time in British students	Journal article	This work was supported by funding for Doctorate in Clinical Psychology training from the UK National Health Service.	anxiety, depression, global mental health, stress	assess the impact of different tuition fees amounts on changes in student mental health over time	not included	not included

Roulston, Montgomery, Campbell, & Davidson (2018)	Exploring the impact of mindfulness on mental wellbeing, stress, and resilience of undergraduate social work students	Journal article	not included	mental wellbeing, stress	to measure the impact of a six-week Mindfulness course on the mental well-being and stress of undergraduate social work students in Northern Ireland	not included	not included
Ruggeri, Dempster, Hanna, & Cleary (2008)	Experiences and expectations: The real reason nobody likes stats	Journal article	not included	maths anxiety	develop a method to look at the issues presented in undergraduate psychology statistics courses	not included	n/a
Salvagno (2016)	The highs and lows of students' experiences with ubiquitous connectivity: investigating connections between use of new technologies and well being	Thesis	not included	wellbeing	identify how new technologies and ubiquitous connectivity related activities affect students' day-to-day social and psychological life and consequent well-being	What are the highs and lows of on-campus and online students' experiences with new technologies and ubiquitous connectivity and how do these experiences affect students' sense of well-being? What are the main factors related to students' well-being emerging from the research?	n/a

Shields (2015)	'My work is bleeding': exploring students' emotional responses to first-year assignment feedback	Journal article	This work was supported by a PhD studentship from the University of Wolverhampton.	anxiety	chart first-year undergraduate students who experienced positive and negative feedback and the corresponding emotions they felt and explore ways in which feedback can be more effectively utilised to foster a sense of belonging in students	not included	n/a
Smith & Malcolm (2008)	Evaluating Estrangement: A report into the estrangement application process in higher education student finance	Report	not included	distress	produce an overview of the experiences of students who had applied for independent status on the grounds of estrangement	not included	n/a
Smith (2019)	Student workload, wellbeing and academic attainment	Conference Paper	not included	wellbeing	examine associations between workload, time pressure, hours at the university, and the general positive and negative wellbeing outcomes	not included	not included
Stevenson (2014)	Internationalisation and religious inclusion in United Kingdom higher education	Journal article	not included	exclusion, loneliness	explore the experiences of religious students and the implications for internationalisation of higher education	not included	n/a

Thompson, Wylie & Hanna (2016) [a]	Maths anxiety in psychology undergraduates: A mixed-methods approach to formulating and implementing interventions	Journal article	not included	maths anxiety	learn, from the students themselves, what techniques would be effective in reducing maths anxiety	not included	n/a
Thompson, Wylie & Hanna (2016) [b]	Maths anxiety in psychology undergraduates: A mixed-methods approach to formulating and implementing interventions	Journal article	not included	maths anxiety	reduce psychology students' maths anxiety through the use of three different interventions	not included	the interventions will result in reductions in maths anxiety amongst the students, compared to those students who do not receive any intervention

Sample

Citation	Sample Description	Number of universities sampled	Number of participants	Sample Gender	Age
Boyles & Ahmed (2017)	4th and 5th year dentistry students	1	N = 130	Male 37%; Female 63%; Other 0%	not included
Brewer & Robinson (2018)	undergraduate psychology students	1	N = 9	not included	not included
Carney, McNeish, & McColl (2005)	undergraduate students at a Scottish university	1	N = 756	Male 38%; Female 62%; Other 0%	M = 20.3 (SD not included; range 18-59)[2]
Cohen et al. (2013) [a]	medical students from Imperial, Peninsula, Bristol, Brighton, Hull & York, Leicester, and Cardiff medical schools	1	unclear	not included	not included
Cohen et al. (2013) [b]	medical students at Cardiff, Leicester, Brighton, and Bristol medical schools	1	N = 2,375	Male 36%; Female 64%; Other 0%	unclear
Collings, Swanson, & Watkins (2016)	students attending a "welcome week" lecture from social science departments	1	N = 124 [T1][2]; N = 59 [T2]	Male 14%; Female 86%; Other 0%	M = 18.69 (SD not included; range 17-24)
Galvin et al. (2015)	mental health nursing students enrolled on a 3-year pre-registration undergraduate degree at Cardiff University	1	N = 12	Male 33%; Female 67%; Other 0%	M = 25.58 (SD not included; range 19-39)
Gammon & Morgan-Samuel (2005)	registered nurses, in full-time employment between the age of 25–55, and undertaking a part-time BSc (Hons) Nursing Studies degree programme	not included	N = 50	not included	not included

[2] M = Mean; SD = Standard Deviation; T1 = Time 1 (etc.).

Gerrard & Roberts (2006)	women undergraduate student parents from Kingston University	1	N = 12	Male 0%; Female 100%; Other 0%	M = 39.58 (SD not included; range 29-45)
Gibbons (2012)	first-year students studying their BSc Psychology degree in the host institution	not included	N = 120	not included	not included
Gibbons (2015)	first year BSc psychology students [...] in their second semester at a university in Northern Ireland	1	N = 88	Male 21%; Female 79%; Other 0%	M = 22 (SD not included; range not included)
Goodchild (2017)	part-time students studying on a BA (Hons) in Applied Education Studies degree programme at a university in the East Midlands	1	N = 52 [questionnaire]; N = 6 [interviews]	Male 10%; Female 90%; Other 0%	unclear
Harris (2016) [a]	Life Science students	1	N = 8	Male 38%; Female 62%; Other 0%	M = 27.9 [includes 1 PGR] (SD not included; range not included)
Harris (2016) [b]	undergraduate students	1	N = 343 [T1]; N = 169 [T2]	Male 33%; Female 67%; Other 0% [T1]; Male 34%; Female 66%; Other 0% [T2]	unclear
Hilliard, Kear, Donelan, & Heaney (2020)	students from The Open University (UK) who were studying an undergraduate module on Communication and Information Technologies (T215)	1	N = 76 [survey]; N = 11 [telephone interview - subset of survey participants]	Male 80%; Female 20%; Other 0% [survey]; not included [telephone interview - subset of survey participants]	M = 37.39 (SD = 10.76; range 22-70) [survey]; not included [telephone interview - subset of survey participants]
Houghton & Anderson (2017)	Lancaster University students	not included	not included	not included	not included
Jack, Chase, & Warwick (2019)	students who identify as 'refugees', having been forcibly displaced from their home country	1	N = 9	Male 33%; Female 67%; Other 0%	M = 42.8 (SD not included; range 34-62)

	and who were seeking or had been granted refugee status in the UK				
Lancer & Eatough (2018)	full-time undergraduates	1	N = 9	Male 33%; Female 67%; Other 0%	M = 20.2 (SD not included; range 19-25)
Lewis & Cardwell (2019)	second year students at sixteen medical schools	7	N = 1744	Male 20%; Female 80%; Other 0%	Median = 21 (range 18-51)
Lewis et al. (2009)	undergraduate students studying veterinary medicine, medicine, pharmacy, dentistry, and law at seven English universities	2	N = 280	Male 38%; Female 62%; Other 0%	M = not included (SD = I; range 19-51)
Macaskill (2018)	second-year students who had successfully completed the first year and were not carrying over additional work from the first year, on three-year degrees in a post-92 UK university	1	N = 23	Male 30%; Female 70%; Other 0%	M = 20.81 (SD = 4.49; range not included)
Matei, Broad, Goldbart, Ginsborg (2018)	undergraduate music students enrolled on a Health and Wellbeing for Musicians course	1	N = 81	Male 46%; Female 50%; Other 3%	M = 19 (SD = 1.34; range 18-26)
National Union of Students (2012)	English part-time and full-time students currently participating in higher education	National sample (England)	unclear	not included	not included
National Union of Students (n.d.)	final year students graduating in summer 2015	National sample (England)	N = 617	unclear	unclear
National Union of Students – Union of Students in Ireland (2014)	students at universities in Northern Ireland	National Sample (Northern Ireland)	N = 1897	not included	not included
Neale, Piggott, Hansom, Fagence (2016)	undergraduates at UK universities	>100	N = 6504	not included	not included

Oates et al. (2020)	BSc student midwives from a London-based UK university	1	N = 20	Male 0%; Female 100%; Other 0%	M not included (SD not included; range 19-43)
Perkins et al. (2017)	musicians studying at six UK conservatoires	6	N = 14	not included	not included
Por (2005)	students attending a lecture at the author's university	1	N = 67	Male 9%; Female 91%; Other 0%	not included
Pryjmachuk & Richards (2007)	pre-registration nursing students in the authors' department	1	N = 1362	Male 11.7%; Female 88.3%; Other 0%	not included
Rebholz (2011) [a]	undergraduate students from the University of Hertfordshire	1	N = 51	Male 75%; Female 25%; Other 0%	M = 21.4 (SD not included; range 18-45)
Rebholz (2011) [b]	undergraduate students from the University of Hertfordshire	1	N = 806	Male 48%; Female 52%; Other 0%	M = 21 (SD not included; range 17-47)
Richardson (2013)	national sample of UK undergraduate students	National Sample	N = 411	Male 24%; Female 76%; Other 0%	not included
Richardson et al. (2018)	national sample of British first-year undergraduate students (excluding international students)	National Sample	N = 408	Male 22%; Female 78%; Other 0%	M = 19.9 (SD = 4.68; range 17-57)
Richardson, Elliot, & Roberts (2015)	first year undergraduates at UK universities	>44	N = 390	Male 22%; Female 78%; Other 0% [0.03%]	M = 19.8 (SD not included; range 17-57)
Roulston, Montgomery, Campbell, & Davidson (2018)	students registered on the Bachelor of Social Work (BSW) degree	1	N = 30 [T1]; N = 25 [T2]	Male 17%; Female 83%; Other 0%	M = 29 (SD = 9.70; range not included)
Ruggeri, Dempster, Hanna, & Cleary (2008)	students in an introductory psychological statistics course	not included	N = 27	Male 23%; Female 77%; Other 0%	M = 22.07 (SD not included; range 18-49)
Salvagno (2016)	undergraduate students at a UK university	1	N = 41 [phase 1]; N = 14 [phase 2A]; N = 6 [phase 3]; N = 8 [phase 4];	unclear [phase 1]; Male 36%; Female 64%; Other 0% [phase 2A];	unclear [phase 1]; M = 28.9 (SD not included; range 19-45) [phase 2A];

			N = 24 [phase 5]	Male 17%; Female 83%; Other 0% [phase 3]; not included [phase 4]; Male 46%; Female 54%; Other 0% [phase 5]	M not included (SD not included; range 19-21) [phase 3]; not included [phase 4]; M not included (SD not included; range 19-22) [phase 5]
Shields (2015)	students from two first-year undergraduate modules, which provided formative feedback on assignments	1	N = 24	not included	not included
Smith & Malcolm (2008)	students applying for estrangement status	National Sample	N = 30	Male 37%; Female 53%; Other["Trans"] 10%	not included
Smith (2019)	first and second year undergraduate psychology students at Cardiff University	1	N = 1299	Male 11%; Female 89%; Other 0%	M = 19.4 (SD not included; range 18-46)
Stevenson (2014)	students self-defining as religious	1	N = 15	Male 53%; Female 47%; Other 0%	M = 24.26 (SD not included; range 18-45)
Thompson, Wylie & Hanna (2016) [a]	undergraduate psychology students	1	N = 13	Male 31%; Female 69%; Other 0%	unclear
Thompson, Wylie & Hanna (2016) [b]	first and second year undergraduate psychology students, all from the same institution	1	N = 246	Male <20%; Female >80%; Other 0%	unclear

Methods

Citation	Methodology	Data collection methods	Data analysis methods
Boyles & Ahmed (2017)	Quantitative	questionnaire	unclear
Brewer & Robinson (2018)	Qualitative	semi-structured interviews	IPA
Carney, McNeish, & McColl (2005)	Quantitative	survey	general linear model
Cohen et al. (2013) [a]	Qualitative	focus groups (plus open comments from questionnaire below)	framework analysis
Cohen et al. (2013) [b]	Quantitative	questionnaire (online and paper)	multi-level modelling
Collings, Swanson, & Watkins (2016)	Quantitative	longitudinal questionnaire	exploratory correlation analysis, independent sample t-tests
Galvin et al. (2015)	Qualitative	semi-structured interviews	thematic analysis
Gammon & Morgan-Samuel (2005)	Quantitative	quasi-experimental intervention study	descriptive statistics, independent t-test
Gerrard & Roberts (2006)	Qualitative	interviews	thematic analysis
Gibbons (2012)	Quantitative	questionnaire	regression modelling
Gibbons (2015)	Quantitative	questionnaire	Pearson's correlations, stepwise multiple regression, t-tests
Goodchild (2017)	Mixed methods	questionnaire; interviews	unclear
Harris (2016) [a]	Quantitative	controlled trial	"intention to treat" analysis and "as treated" analysis
Harris (2016) [b]	Qualitative	interviews	grounded theory
Hilliard, Kear, Donelan, & Heaney (2020)	Mixed methods	survey (online), telephone interviews	descriptive statistics, inductive thematic analysis
Houghton & Anderson (2017)	Qualitative	focus groups	not included
Jack, Chase, & Warwick (2019)	Qualitative	photovoice, narrative inquiry	content analysis, thematic analysis
Lancer & Eatough (2018)	Qualitative	semi-structured interviews	IPA
Lewis & Cardwell (2019)	Quantitative	questionnaire	ANOVA

Lewis et al. (2009)	Quantitative	questionnaire	between groups comparisons, non-parametric analysis
Macaskill (2018)	Mixed methods	narrative interviews and questionnaire	thematic analysis by sub-groups
Matei, Broad, Goldbart, Ginsborg (2018)	Mixed methods	questionnaire & semi-structured interviews	open coding, within and between subjects' analyses
National Union of Students (2012)	Quantitative	survey	frequency distributions
National Union of Students (n.d.)	Quantitative	survey	frequency distributions
National Union of Students – Union of Students in Ireland (2014)	Mixed methods	questionnaire with closed- and open-ended questions (findings for open-ended questions not included in the NUS-USI report)	descriptive statistics
Neale, Piggott, Hansom, Fagence (2016)	Quantitative	questionnaire	descriptive statistics, regression analysis
Oates et al. (2020)	Qualitative	phone and face-to-face interviews	thematic analysis
Perkins et al. (2017)	Qualitative	semi-structured interviews	inductive thematic analysis
Por (2005)	Quantitative	questionnaire	ANOVA, descriptive statistics, Spearman's rank correlation
Pryjmachuk & Richards (2007)	Quantitative	questionnaire	logistic regression
Rebholz (2011) [a]	Qualitative	focus groups	framework of Miles & Huberman (1994)
Rebholz (2011) [b]	Quantitative	survey	frequency distributions
Richardson (2013)	Quantitative	longitudinal survey	MANOVA
Richardson et al. (2018)	Quantitative	longitudinal survey	hierarchical multiple linear regression
Richardson, Elliot, & Roberts (2015)	Quantitative	questionnaire	factorial MANOVAs
Roulston, Montgomery, Campbell, & Davidson (2018)	Mixed methods	questionnaire, focus groups	independent t-tests, paired samples t-test, thematic content analysis
Ruggeri, Dempster, Hanna, & Cleary (2008)	Mixed methods	focus groups and survey (survey findings not relevant to review)	thematic analysis
Salvagno (2016)	Qualitative	qualitative survey [phase 1];	grounded theory

		interviews [phase 2A]; Experience Sampling Method [phase 3]; participant feedback [phase 4]; focus groups [phase 5]	
Shields (2015)	Qualitative	interviews	narrative inquiry
Smith & Malcolm (2008)	Qualitative	survey	thematic analysis
Smith (2019)	Quantitative	survey (online)	correlations, descriptive statistics, MANOVA
Stevenson (2014)	Qualitative	narrative interviews	identifying themes and stories
Thompson, Wylie & Hanna (2016) [a]	Qualitative	focus groups	deductive thematic analysis
Thompson, Wylie & Hanna (2016) [b]	Quantitative	self-report measure	mixed ANCOVAs

Findings

Citation	Relevant Findings
Boyles & Ahmed (2017)	Students paying the £9000 rate of tuition fees are more likely to experience stress relating to the amount of their student loan and total student loan debt than those paying £3920.
Brewer & Robinson (2018)	Some participants described being uncomfortable participating in experiments and face-to-face studies, which they had done for course credit.
Carney, McNeish, & McColl (2005)	Being in debt has a small, but significant, negative effect on students' mental wellbeing (p = 0.000). Having a part-time job has a small, but significant, negative effect on students' mental wellbeing (p = 0.000).
Cohen et al. (2013) [a]	Improvements to the culture that medical students experience (reducing isolation and expectations of resilience) appear to effect greater improvements in wellbeing than other areas. Medical students report that the hours they work are a source of stress. Hidden costs for medical students (e.g. Clothes for placement, stethoscope, books, travelling) can cause additional stress. Students describe feeling like a statistic and being a source of income for the school.
Cohen et al. (2013) [b]	Medical students reported the following potential solutions to improve wellbeing: • planning timetables to allow usable blocks of time and minimising gaps between lectures • consideration of scheduling to prevent excessive traveling • setting aside a half day for them to catch up with work, study, socialise or do extra-curricular activities • incorporating a reading week • ongoing and timely feedback • tailored group work to create a positive learning experience • providing a range of learning styles • explicit learning objectives • clarifying tutors' roles • providing drop-in services such as banking
Collings, Swanson, & Watkins (2016)	Levels of personal support from a mentor were positively associated with student wellbeing. Mentoring for personal issues was associated with lower mood and wellbeing. The direction of this relationship is not clear: it could be that students with lower levels of mood and wellbeing used the mentoring support more.

Galvin et al. (2015)	The authors emphasise the importance of matching placements to students' clinical experience to help students feel more in control on placement. Nursing students describe feeling that the demands of placement and academic work are high and that the high number of contact hours can be stressful. Mental health nursing students describe the emotional labour of placement as being stressful and exhausting. Nursing students describe making mistakes, witnessing difficult situations and not being properly debriefed by the staff on placement, which makes the incidents even more stressful. Student nurses describe being sent to inappropriate placements for their level of experience, which leads to them feeling out of their depth and out of control. Staff shortages on placement lead to students helping out on their placements, rather than working alongside other staff, which can lead to them being in risky or vulnerable situations. Nursing students describe how they have to take on extra paid work on top of their academic work and placement in order to have enough money, which is tiring and stressful.
Gammon & Morgan-Samuel (2005)	Students who participated in structured tutorial support had significantly lower stress scores than controls and also reported greater levels of self-esteem.
Gerrard & Roberts (2006)	91.7% of participants described how financial pressures had a negative effect on their mood. For some this was in the form of depression, others described anxiety or feelings of guilt. For student parents, including single parents, financial pressures were experienced as considerable source of stress. This is reflected in wider epidemiological literature.
Gibbons (2012)	Students rated course delivery as a negative source of stress. Course delivery in this study included learning materials and teaching strategies.
Gibbons (2015)	Students who felt part of a learning community were more likely to consider learning resources such as IT systems and the library as positive sources of stress. Students rated course delivery as a negative source of stress. Course delivery in this study included learning materials and teaching strategies. The more students struggled with this source of stress, the less they felt part of the learning community. When students rated learning resources (such as the library and IT facilities) as a positive source of stress, they felt less connected to their learning environment. The more student support services such as the guidance centre and personal tutors were seen as a source of negative stress, the less students felt a part of a learning community. The more social opportunities (such as interactive course sessions, social events, and clubs/societies) were seen as a source of negative stress, the less students felt a part of a learning community.

Goodchild (2017)	Part-time students generally described the initial induction as a positive experience, proving reassurance and sense of belonging in the university and on the course. One person described how induction made them feel anxious and intimidated about studying. Part-time students described having to travel long distances to campus.
Harris (2016) [a]	A paper-based stress management psychoeducation intervention did not have a significant effect on students' stress levels. However, this study was underpowered and there was low compliance with the intervention. An online stress management psychoeducation intervention did not have a significant effect on students' stress levels. However, this study was underpowered and there was low compliance with the intervention.
Harris (2016) [b]	Students report the time pressures of exams and assessments to be very stressful. Students report that clashing deadlines were particularly problematic. One student described asking for advice on an essay assignment, following it and then being marked down and given feedback that contradicted the advice they had received. Moving into second year was described as stressful because the work was more complicated than in first year. Students reported that working a part-time job alongside studies was stressful.
Hilliard, Kear, Donelan, & Heaney (2020)	Students discussed how more guidance and advice relating to best practices for group work (e.g. from tutors or past students) would reduce their anxiety. Students described how changes to how group work is assessed (particularly the group mark element) might have reduced their anxiety around it. Students discussed how more help and support with encouraging engagement and participation of group members would reduce their anxiety. Helping group members get to know each other before beginning the group project can help create a supportive climate which students see as being important to reducing anxiety. Students discussed how more guidance and information on using additional communication tools during group work would reduce their anxiety. Students described how they felt the marking criteria were unclear in group work and clarification would have reduced anxiety. 56.6% of students described feelings of anxiety relating to an "online collaborative project" as part of their coursework. This was most commonly due to the uncertainties involved in working with strangers.
Houghton & Anderson (2017)	Students described how much they value a smile from the admin staff when they collect their feedback. Admin staff can be helpful points of contact for students, combining knowledge of the course with time and compassion.
Jack, Chase, & Warwick (2019)	Universities are not generally equipped to promote the mental wellbeing of refugee students. Uncertain immigration status directly or indirectly affects students' wellbeing, with students reporting anxiety and stress related to their legal status.

Lancer & Eatough (2018)	One-to-one coaching gave students strategies to take control of their work and problems, helped them find balance and focus, increased confidence, and motivation, gave them new perspectives, and empowered them to make changes.
Lewis et al. (2009)	Medical students on problem-based learning courses were less likely to be stressed because of a lack of encouragement from teachers and feeling anonymous and isolated. Medical students on problem-based learning courses were more likely to be stressed because of unclear expectations, a lack of free time, and having no opportunities to pursue academic interests. Two thirds of medical students felt like they received insufficient feedback from their teachers.
Lewis & Cardwell (2019)	Among vocational degrees, law students reported the lowest levels of mental wellbeing. Veterinary students reported the highest levels of mental wellbeing among the groups surveyed.
Macaskill (2018)	As module groups changed, they were no longer studying with their friends and felt lonelier. Students reported that as first year marks did not count towards their degree grade, they did not spend as much time studying. This led to knowledge gaps in the second year. Students agreed that second year was more challenging academically and, therefore, more stressful. Students who were unsure about what they wanted to do after their degree felt anxious and guilty at careers events. Students needed to be more active in requesting support from staff in the second year and felt like there was less support available to them. Students described worrying about student debt but receiving reassurance from their family and peers.
Matei, Broad, Goldbart, Ginsborg (2018)	Students who participated in a health education course did not show a significant difference from controls either before or after the intervention. However, the controls had higher levels of stress compared to the students on the course after the intervention. It is not clear whether the intervention was the sole cause of these findings.
National Union of Students (2012)	Over half of students worried about future levels of debt. Those most likely to worry were those who began their course between the ages of 17 and 24, and full-time undergraduates. Over half of student parents, NHS students, mature students and disabled students worried about not having enough money for basic living expenses. Between 55.0% and 73.0% of students reported worrying about their financial situation.
National Union of Students (n.d.)	Students paying £9000 in tuition fees with maintenance grants were statistically less likely to worry about their student debt than those without maintenance grants. Only 22.0% of students paying £9000 in tuition fees were not worried at all about their student loan debt in the run-up to graduation. BAME students paying £9000 in tuition fees were more likely to be concerned about the interest on their student loan debt compared to non BAME students.
National Union of	Regularly worrying about meeting basic living expenses was more common among students over 25 (80.0%) than those who started university aged between 17 and 20 (53.0%).

Students – Union of Students in Ireland (2014)	
Neale, Piggott, Hansom, Fagence (2016)	Students who scored low on measures of wellbeing were more likely than students in the top quartile to be dissatisfied with their accommodation, including communal areas, and less likely to feel integrated in their accommodation.
Oates et al. (2020)	Midwifery students described positive experiences of debriefing on placement, which helped them come to terms with difficult experiences, such as witnessing a stillbirth. Students described finding regular reflection sessions helpful for building a support network. Students described wanting consistency from their tutors and mentors, both in terms of consistent support and consistent expectations. This consistency helped the students feel supported and better manage the emotional demands of their training. Students described how having opportunities to have consistent contact with their peers and educators improved their wellbeing. Midwifery students described being on a "relentless" course, with no breaks/time off, despite the course tutors repeatedly advising students to take time off for themselves. Students describe their midwifery course as challenging and emotional labour. They also describe having to hide negative feelings in order to remain "professional".
Perkins et al. (2017)	Conservatoire students described long rehearsals and feeling overworked. Ten percent of conservatoire students described feelings of anxiety relating to performing on stage. Students at music conservatoires described that instrumental tuition felt like constant criticism. They acknowledged that this was the only way to learn, but expressed concern at how it affected their mental wellbeing.
Por (2005)	Child and mental health branch nursing students saw "workload" as the second most stressful situation. Adult, child, and mental health branch nursing students saw "inadequate emotional preparation" as the most stressful situation. Mental health branch nursing students rated "having to deal with abusive patients" as being one of the top three most frequent sources of stress. Mental health branch nursing students rated "patient making unreasonable demands" as being one of the top three most frequent sources of stress. Child and mental health branch nursing students rated "being asked a question by a patient/ families for which I do not have a satisfactory answer" as being one of the top three most frequent sources of stress. Child branch nursing students rated "performing procedures that patients experience as painful" as being one of the top three most frequent sources of stress.

	Adult branch nursing students rated "not enough time to provide emotional support to the patient" as being one of the top three most frequent sources of stress. Adult and child branch nursing students rated "watching a patient suffer" as being one of the top three most frequent sources of stress. Adult branch nursing students saw "death and dying" as the second most stressful situation. Adult branch nursing students rated "not enough staff" as being one of the top three most frequent sources of stress.
Pryjmachuk & Richards (2007)	There was an association among student nurses between stressful clinical concerns and positive mental health, although the causal link between the two is not clear.
Rebholz (2011) [a]	Course workload was mentioned by students as one of the most challenging things in relation to mental wellbeing at university. Exams were mentioned by students as one of the most challenging things in relation to mental wellbeing at university. The university's drug and alcohol culture was mentioned by students as a challenge in relation to mental wellbeing at university, especially because there was little effort to diversify the events on offer. Parking problems were mentioned by students as a challenge in relation to mental wellbeing at university. Safety of personal belongings was mentioned by students as a challenge in relation to mental wellbeing at university. Money problems were mentioned by students as one of the most challenging things in relation to mental wellbeing at university. Having to work long hours off campus was mentioned by students as one of the most challenging things in relation to mental wellbeing at university.
Rebholz (2011) [b]	57.1% of students reported feeling depressed, unhappy, or anxious as a result of working long hours off campus at some point during university. 72.2% of students reported that improving the bus service was important or very important to improve their mental/emotional wellbeing at university. 54.9% of students reported that making security guards more visible was important or very important to improve their mental/emotional wellbeing at university. 50.4% of students reported that increasing security measures in halls and around campuses was important or very important to improve their mental/emotional wellbeing at university. 55.9% of students reported that assurance that CCTV cameras are working was important or very important to improve their mental/emotional wellbeing at university. 85.2% of students reported feeling depressed, unhappy, or anxious as a result of money problems at some point during university. 45.0% of students reported that sorting out the drink/drugs problem was important or very important to improve their mental/emotional wellbeing at university. 85.1% of students reported feeling depressed, unhappy, or anxious as a result of exams at some point during university. 70.2% of students reported feeling depressed, unhappy, or anxious as a result of not having helpful lecturers at some point during university. 91.5% of students reported feeling depressed, unhappy, or anxious as a result of worries about coursework at some point during university. 41.6% of students reported that extending the opening times of support services was important or very important to improve their mental/emotional wellbeing at university.

	60.0% of students though a refresher induction would be helpful because they had forgotten the information they had been given. 53.0% of students reported that induction week was helpful for identifying support services. International students were significantly more likely to find induction week helpful than home students. 61.6% of students rated "having access to health and leisure facilities" as important or very important to their mental and emotional wellbeing. 73.9% of students rated "having a pleasant environment" as important or very important to their mental and emotional wellbeing. 72.4% of students rated "feeling safe and protected on campus" as important or very important to their mental and emotional wellbeing. 75.2% of students rated "knowing your belongings will be secure" as important or very important to their mental and emotional wellbeing.
Richardson, Elliot, & Roberts (2015)	No evidence of increased tuition fees having an impact on student mental health. Worries around debt may increase closer to, or after, graduation.
Richardson et al. (2018)	Amount of debt does not appear to be a risk factor for psychosis in students. Financial difficulties increase the risk of developing psychosis in students.
Richardson (2013)	The increase in tuition fees appears to limit the recovery of students' mental health over time, rather than cause an immediate impact. There appears to be a bi-directional relationship between financial difficulties and student mental health.
Roulston, Montgomery , Campbell, & Davidson (2018)	A six-week mindfulness course run for social work students improved wellbeing and stress compared to a control group. The authors suggest that mindfulness could be a component of an "emotional curriculum" in social work.
Ruggeri, Dempster, Hanna, & Cleary (2008)	Psychology students described being worried about statistics exams, but often finding them easier than expected. Psychology students described larger classes and lack of familiarity with staff/students in their class increased feelings of anxiety around statistics. Psychology students preferred learning statistics through small group tutorials where they could get to know the instructor. Psychology students reported being unaware that statistics was a part of their degree course prior to enrolment.
Salvagno (2016)	Online materials help students feel more confident and aid with understanding of course content, both of which contribute to improved wellbeing. Having ubiquitous connectivity through mobile devices allows students flexibility to fit their studies around the rest of their life. This improves the quality of their daily life and wellbeing. Clarity of communication with online students reduces worries and frustrations around misinterpreting instructions. Having easy access to the information they need helps students feel more empowered and able to reach their goals. Students see technology as resources to help them manage negative emotions and improve their wellbeing. Online students report difficulties managing communications and interactions online for group work.

	Students describe feeling overwhelmed by the stream of information sent to their devices and have difficulties identifying relevant information from the resources available to them online. This leads to frustration and difficulty focusing. Students get frustrated when dealing with complicated website layouts or poor-quality materials. This may be because they have expectations of what these should look like and are frustrated when these are not met. Students experience worry and distress when technology does not work as expected or as needed. Students may have become over-reliant on technology and feel helpless and frustrated when this happens. Having easy access to support via online services appears to be affecting students' ability to cope with frustrations and uncertainties and hinders their development of problem-solving skills.
Shields (2015)	Receiving positive feedback on their first assignments gave students a confidence boost and increased their self-esteem. The author suggests that a low stakes assessment may guide students in the expectations of academic work but reduce the risks associated with "failure" and, therefore, reduce anxiety. Students describe feelings of anxiety while waiting for feedback on their first assignment at university. Receiving negative feedback can lead students to question whether they are good enough to study at university.
Smith (2019)	Workload was associated with increased course stress, increased negative wellbeing, and increased positive wellbeing. This may indicate that workload is an example of a positive source of stress, creating a challenge which is initially stressful, but later has positive benefits. Hours spent at university showed no association with measures of wellbeing. Time pressure was significantly associated with course stress and negative wellbeing (life stress, depression & anxiety).
Smith & Malcolm (2008)	Applicants for estrangement status report being required to prove their estrangement from their parents in insensitive and potentially dangerous ways. These included things such as having to ask their parents for a letter confirming that they do not have or want a relationship with them. Applicants for estrangement status describe the process as "a very stressful situation". Reconciliation attempts can be used against applicants for estrangement status, as evidence of a relationship with the parent(s). LGBT+ applicants can experience extra complications with the system. Two applicants in the study were unable to prove estrangement status and were forced to contact their parents again in order to apply as dependants.
Stevenson (2014)	Religious students describe being "othered" by a campus culture that claims to have a "multicultural ethos", but, in reality, does not challenge intolerance or derogatory remarks towards them. For some students, this can lead to them finding social situations off campus to make friends, for others, it can be severe enough for them to leave the university altogether. Religious students describe how university rules and policies discriminate against them, including students not being given time off for religious festivals during the teaching timetable, ignoring complaints from a religious student about their flatmates getting drunk, smoking having sex, or not being allowed to put up posters to advertise the Christian Union. These kinds of situations lead to religious students feeling excluded and isolated by university policies. This contrasts sharply with the university's internationalisation strategy to encourage "meaningful cross-cultural engagement for all students to create a sense of belonging".

Thompson, Wylie & Hanna (2016) [a]	Students suggested that including more real-world application of maths and statistics would make it less abstract and would help reduce anxiety. Students suggested that increasing student exposure to maths would help reduce anxiety. This could be through extra lectures/ workshops or homework or practice exams during the year. Students suggested that making lectures less intimidating and more accessible would help reduce anxiety.
Thompson, Wylie & Hanna (2016) [b]	Students who received a short talk intervention, which explained the application of the topics being studied, showed a small decrease in maths anxiety afterwards compared to other groups and controls. This effect appeared to persist two weeks later. It is not clear if this was due to the applied content or the additional tuition time. Students who received a small group intervention, which split the students into groups of eight and assigned each group an assistant (thereby improving the ratio of teaching staff to students), showed a very small and non-significant decrease in maths anxiety afterwards, compared to other groups and controls. An email intervention for statistics anxiety, which consisted of being given the email address of the principle experimenter and being told they could contact them at any time they needed help or had questions about their work, showed no improvement in levels of statistics anxiety over the control group. The authors suggested this may be because the intervention just served to highlight the participants' anxieties or because the contact was not a mathematics tutor.

Conclusions

Citation	Conclusions	Reported limitations	Authors' suggestions for future research
Boyles & Ahmed (2017)	Student debt affects student stress levels, and students who have more debt have more stress associated with it.	not included	not included
Brewer & Robinson (2018)	Research participation opportunities for students should be varied to enable participation from as many students as possible and to minimise distress caused by a particular type of study.	reliance on student perceptions of change; limited sample	how research participation aids self-discovery; how personal growth from taking part in research studies can be supported
Carney, McNeish, & McColl (2005)	University culture affects student mental health. Being in debt and working part-time each have a small negative effect on student mental health.	756 Year 2 students may not be representative of the more diverse university population	whether the relationships between part-time working, debt and health and well-being exist in the wider university population
Cohen et al. (2013) [a]	A shift in culture would have the biggest effect in terms of improving student wellbeing.	Objective measures of wellbeing were not used; cross-sectional data	longitudinal studies
Cohen et al. (2013) [b]	A large number of possible solutions to improve student mental wellbeing have been suggested through this study.	Objective measures of wellbeing were not used; cross-sectional data	longitudinal studies
Collings, Swanson, & Watkins (2016)	Students with low mood and low wellbeing are using their mentors more and may be more likely to withdraw from their studies. A yearlong peer mentoring scheme may help improve student wellbeing and retention.	difficulties measuring [operationalising] the mentoring experience - confounding variables: mentor's dedication; variability of peer mentor commitment	assess usage and perception of peer mentoring schemes across several HEIs; assess experiences of mentoring for longer durations; focus on potentially vulnerable groups
Galvin et al. (2015)	Mental health nursing students are overworked which increases their stress levels. Students should be given appropriate placements for their level of experience, particularly in mental health placements.	nature and size of the sample; difficult to generalise	not included

Gammon & Morgan-Samuel (2005)	Students receiving tutorial support are better able to cope with their courses and consequently experience less stress.	post-test only design; small sample size; limited control over research conditions due to ethical constraints; significant differences may be due to confounding variables; stress scale scores appeared skewed - parametric test may have been inappropriate	pre-test post-test design; larger sample; matched subject design; use non-parametric test for skewed data
Gerrard & Roberts (2006)	Students' parents experience financial hardship which leads to severe levels of stress.	sample not representative; (higher socio-economic area, no ethnic minorities); interviews time limited; assessment of stress not exhaustive; parents seemed hesitant and defensive when the impact on their children was discussed	research into sub-groups of students; UK based research; lone parents; longitudinal research
Gibbons (2012)	Course delivery is important to make students feel welcome. It may be that the outcome measure "learning community" is actually affecting students wellbeing through support from peers.	survey design (self-reporting, incomplete responses, response sets, state congruence recall); opportunity sample; small sample size; limited number of variables in regression model; prohibited interaction effects being tested	not included
Gibbons (2015)	First year students may experience new challenges at university, and these can be a source of stress and anxiety until the student learns to overcome them.	assumed validity of NSS survey design; volunteer sample; small sample size	not included
Goodchild (2017)	Students expressed trepidation and anxiety as they began university and had competing demands on their time. They had a lack of confidence in their academic ability and worried about being seen as failures.	NA	not included
Harris (2016) [a]	The paper and online interventions did not significantly impact on students' stress levels, although this could be due to low compliance with the resources. The small sample size means that it is not possible to generalise these results.	Sampled students have not withdrawn from studies	not included [for qualitative portion]

Harris (2016) [b]	Exams and assessments, managing time and deadlines, having enough money, and career prospects were the top four causes of stress.	groups were not fully randomised; low uptake	replicate current study
Hilliard, Kear, Donelan, & Heaney (2020)	Anxiety around group work was commonly due to the uncertainty it creates. It could be reduced by creating a supportive setting for group work and building stronger relationships within the groups.	small sample; self-selected sample leading to response bias; sample may not be representative of other modules/institutions; participants may have been more confident with IT due to being distance learners; no consideration of the positive aspects of anxiety	temporal changes in anxiety; broader contexts; more diverse sample; blended/traditional teaching contexts; quantitative approaches with larger sample sizes
Houghton & Anderson (2017)	Learning can improve or worsen student mental wellbeing.	not included	not included
Jack, Chase, & Warwick (2019)	Immigration status had a direct or indirect effect on students' mental wellbeing. Anxiety and distress were described when the uncertainty was ongoing. There is insufficient mental health promotion for refugee students.	small sample size; varied sample	not included
Lancer & Eatough (2018)	One-to-one coaching is a good investment for universities and would support students more generally.	small sample; participants were academically able and articulate; focus on Arts and Humanities courses; no record of coaching techniques used - varied between students	follow up interviews after coaching has ended; map effects of coaching at different stages in the process; personal tutors as coaches; other cohorts/post-grad students; students from different courses and universities
Lewis et al. (2009)	Undergraduate students on a problem-based learning programme have significant differences in perceived course-related stressors to undergraduate students on a non-problem-based learning programme.	only two medical schools; two programmes are at extreme ends of PBL content; not all students attended the plenary sessions where participants were recruited; confounding factors: differences between the schools other than curriculum format or quality of implementation of the curriculum, recent curriculum changes, ethnicity of students, proportion of students with relatives in the	larger and broader sample of medical schools; semi-structured interviews to identify additional perceived stressors; longitudinal studies - especially between pre-clinical and clinical stage

		medical profession, proximity to examinations; only selected questions from the two questionnaires used were included; two questions were reworded; self-report questionnaire	
Lewis & Cardwell (2019)	Law students had the lowest levels of mental wellbeing among professional degrees, whilst veterinary students had the highest. It is important to support students through their professional training.	non-response bias; medical students express concerns about repercussions of disclosing; different recruitment methods for different groups; short term focus of measures; no distinction between suicidal ideation and suicide attempts	longitudinal studies
Macaskill (2018)	Students' anxiety levels would benefit from easy, inexpensive changes to current practices.	did not include views from alienated students; limited to universities where most students are the first in their family to attend university	incorporate views from alienated students; explore issues for students at different types of universities
Matei, Broad, Goldbart, Ginsborg (2018)	The intervention group may have fared poorly because they had deadlines and exams shortly after the intervention, whereas the control group, who were a year younger, did not.	did not consult wide variety of health professionals; study authors did not control seminars and lectures in the module delivered by staff outside of the study; questionnaires were lengthy; unable to recruit a control group of first years for ethical reasons	consult best possible literature; use iterative processes; follow up studies after longer periods
National Union of Students (2012)	not included	not included	not included
National Union of Students (n.d.)	It is not yet clear how graduates will be affected by their higher levels of debt and what impact they will have on finances over a lifetime, considering that repaying the student loan will limit funds for home ownership and retirement plans/pensions.	disproportionate gender representation - addressed with weighting based on HESA data	Researchers are continuing to follow up with participants of this study to assess ongoing impact.
National Union of	not included	not included	not included

Students – Union of Students in Ireland (2014)			
Neale, Piggott, Hansom, Fagence (2016)	The group of students who scored highest on mental wellbeing could be a useful population to study in order to identify what leads to their positive mental wellbeing.	not included	student accommodation
Oates et al. (2020)	Students described becoming a midwife as stressful and were advised to learn to "self-care", despite having no time in which to do so. Having opportunities to meet and build relationships with their peers on their course was seen as important to their wellbeing.	qualitative study of self-selecting participants	compare midwifery students' experiences between institutions in different locations
Perkins et al. (2017)	Receiving feedback on performance, competition and an intense workload were described as challenges to students' mental wellbeing.	sample biased towards women; uneven distribution of instruments/voice groups; self-selection of participants; interviews varied in length; findings not generalizable	what impacts on musicians' interpretation of barriers and enablers to health
Por (2005)	Generally, students from adult, child, and mental health branches experienced similar levels of stress; however, there was some variability in the sources of stress reported.	Not longitudinal - may have been mediating variables; did not examine non-occupational stressors	not included
Pryjmachuk & Richards (2007)	not included	limited generalizability; non-response bias; self-report measures; response style distortion; social desirability distortion; common method variance (similarities between DV and IVs leads to inflated correlations)	interventions to reduce stress
Rebholz (2011) [a]	Students have little control over the university environment, instead policies and procedures are decided on by committees and governors.	disproportionately high number of law students in focus groups; over representation of Chinese students in focus groups; language difficulties	identify what type of service to promote mental health would be acceptable and workable to both service users and service providers

Rebholz (2011) [b]	Students have little control over the university environment, instead policies and procedures are decided on by committees and governors.	disproportionately high number of law students in focus groups; over representation of Chinese students in focus groups; language difficulties	identify what type of service to promote mental health would be acceptable and workable to both service users and service providers
Richardson, Elliot, & Roberts (2015)	The increase in tuition fees does not seem to have led to a persistent impact on student mental health. However, worries around student debt may increase closer to graduation. This could mean that whilst there is little difference in the short term, the increase in debt may lead to an increase in mental health problems later in life.	high dropouts at T3 & T4; cohorts completed questionnaires at slightly different times of year and with slightly different lengths of time between time points; sample not representative	not included
Richardson et al. (2018)	Financial difficulties increase risk of psychosis in students; however, financial variables linked to other mental health conditions, such as amount of debt, do not appear to increase risk of psychosis.	predominantly white and female sample; potential selection bias due to longitudinal methods (attrition); short time period for follow up; several regressions run; potential overlap in time points; low sample size/low power; findings do not apply to those with established psychosis	confirm this finding in light of the limitations of this study
Richardson (2013)	The tuition fee increase had no immediate effect on student mental health; however, it appears to reduce recovery from mental-ill-health over time. This may result in worse levels of mental wellbeing overall, or longer periods of illness for those with pre-existing conditions.There may be a bi-directional relationship between financial difficulties and student mental ill-health.	not all possible confounds assessed; the sample size might not have been large enough for the T2 regression; high dropout rate; regression may not have been best choice analysis; high levels of missing data; large number of statistical tests used; sample may not be representative; self-selecting participants; short follow up period	monitor the on-going impact of increased tuition fees on student mental health identify which interventions may be effective
Roulston, Montgomery , Campbell, & Davidson (2018)	A six-week mindfulness course appeared to improve mental wellbeing and reduce stress; however, it may not be suitable for all students and should not be a mandatory part of social work training.	sample size; convenience sampling; dropout rate; different years of study of participants; timing of final questionnaires; approach and personality of trainer may have influenced results; effects cannot be attributed to mindfulness course alone	not included

Ruggeri, Dempster, Hanna, & Cleary (2008)	Being more familiar with tutors may help reduce student anxiety around statistics. Statistics anxiety appears to be common and may be reduced by simply informing incoming students that statistics is part of their course.	social desirability;	pre-emptive [pre-degree] interventions to improve statistics anxiety and attitudes
Salvagno (2016)	Technology provides students with ease and freedom in their daily activities; however, it can also lead to overwhelming amounts of information and communication.	findings not transferable to other universities	use a quantitative approach to validate the proposed model; adapting the model to specific sub-groups of students (e.g. on-campus, online, mature)
Shields (2015)	Students attach a lot of emotion to their feedback and this then either confirms or denies for the student whether they belong at university. The levels of stress associated with feedback should not be underestimated.	not included	not included
Smith (2019)	The relationship between high workload, high stress, high positive wellbeing, and high negative wellbeing may indicate that high workloads are perceived as a challenge which provides motivation, efficiency, and attainment.	cross-sectional study; non-representative sample	longitudinal studies, preferably with interventions changing workload, are required to determine whether workload has direct effect; address the microstructure of workload and time pressures on wellbeing and attainment.
Smith & Malcolm (2008)	not included	not included	a study into the feasibility of collecting data on the reasons for estrangement
Stevenson (2014)	The institution did not live up to its "multicultural ethos" and students did not experience "meaningful cross-cultural engagement". This lack of intervention on campus led to discrimination, "othering", and exclusion.	small sample size; only one university	investigate possible link between religious affiliation responses to discrimination; further research exploring cross-religious views and toleration; comparisons with the experiences of students at UK universities with religious foundations and in countries in which religion and state are more explicitly combined
Thompson, Wylie & Hanna (2016) [a]	Students feel that interventions would be most effective if they were changes made to the course itself, rather than adding something "extra" to the curriculum.	small sample size; social desirability	not included

Thompson, Wylie & Hanna (2016) [b]	The levels of maths anxiety were lower than anticipated, and this may go some way towards explaining the ineffectiveness of the interventions.	variability between samples; topics may have been too easy	develop interventions which replace current teaching methods; explore sources of positive effects

Appendix E: Search strategy for PsycINFO on 20/5/20

#	Search string	Limiters	References returned
1	TI (student* OR undergrad* OR fresher* OR college* OR universit* OR campus*) OR AB (student* OR undergrad* OR fresher* OR college* OR universit* OR campus*)	none	663,262
2	TI ((mental* ill*) OR (mental* disorder*) OR (mental* health*) OR (mental* well*) OR (psychological* well*) OR (psychological* disorder*) OR (psychological* health*) OR (psychological* ill*) OR stress* OR distress* OR (emotional* health*) OR (emotional* well*) OR (emotional* disorder*) OR trauma* OR withdraw* OR depress* OR hopelessness OR isolat* OR lonel* OR anxi* OR worry) OR AB ((mental* ill*) OR (mental* disorder*) OR (mental* health*) OR (mental* well*) OR (psychological* well*) OR (psychological* disorder*) OR (psychological* health*) OR (psychological* ill*) OR stress* OR distress* OR (emotional* health*) OR (emotional* well*) OR (emotional* disorder*) OR trauma* OR withdraw* OR depress* OR hopelessness OR isolat* OR lonel* OR anxi* OR worry)	none	1,000,400
3	TI (environment* OR structur* OR “ecological framework” OR “ecological model” OR contex* OR institution* OR policy OR policies OR organisation* OR setting* OR climate OR level OR media OR population* OR community OR communities OR society OR societies OR societal OR social OR norm* OR regulat* OR disadvantage* OR inequalit* OR condition* OR cultur* OR procedure* OR financ* OR money OR fees OR loan* OR debt OR requirement* OR law* OR transport OR travel OR housing OR living OR crime* OR austerity OR employ*) OR AB (environment* OR structur* OR “ecological framework” OR “ecological model” OR contex* OR institution* OR policy OR policies OR organisation* OR setting* OR climate OR level OR media OR population* OR community OR communities OR society OR societies OR societal OR social OR norm* OR regulat* OR disadvantage* OR inequalit* OR condition* OR cultur* OR procedure* OR financ* OR money OR fees OR loan* OR debt OR requirement* OR law* OR transport OR travel OR housing OR living OR crime* OR austerity OR employ*)	none	3,151,155
4	TI (UK OR "United Kingdom" OR GB OR "Great Britain" OR British OR England OR Wales OR Welsh OR Scotland OR Scottish OR "Northern Ireland" OR “Northern Irish”) OR AB (UK OR "United Kingdom" OR GB OR "Great Britain" OR British OR England OR Wales OR Welsh OR Scotland OR Scottish OR "Northern Ireland" OR “Northern Irish”) OR KW (UK OR "United Kingdom" OR GB OR "Great Britain" OR British OR England OR Wales OR Welsh OR Scotland OR Scottish OR "Northern Ireland" OR “Northern Irish”) OR PL United Kingdom	none	150,260
5	#1 AND #2 AND #3 AND #4	none	2,316
6	#1 AND #2 AND #3 AND #4	Publication Year: 2005-2020	1,791

Appendix F: List of Google searches

Search ID	Search strategy	Date searched	Total results
1	student mental illness report filetype:pdf	27/05/2020	45,300,000
2	student mental disorder report filetype:pdf	27/05/2020	56,000,000
3	student mental health report filetype:pdf	27/05/2020	162,000,000
4	student mental wellbeing report filetype:pdf	27/05/2020	65,600,000
5	student psychological wellbeing report filetype:pdf	27/05/2020	34,500,000
6	student psychological disorder report filetype:pdf	27/05/2020	27,100,000
7	student psychological health report filetype:pdf	27/05/2020	54,200,000
8	student psychological illness report filetype:pdf	27/05/2020	39,600,000
9	student stress report filetype:pdf	27/05/2020	131,000,000
10	student distress report filetype:pdf	28/05/2020	34,800,000
11	student emotional health report filetype:pdf	28/05/2020	83,300,000
12	student emotional wellbeing report filetype:pdf	28/05/2020	53,100,000
13	student emotional disorder report filetype:pdf	28/05/2020	18,900,000
14	undergraduate mental illness report filetype:pdf	28/05/2020	6,490,000
15	undergraduate mental disorder report filetype:pdf	28/05/2020	6,170,000
16	undergraduate mental health report filetype:pdf	28/05/2020	18,500,000
17	undergraduate mental wellbeing report filetype:pdf	28/05/2020	6,080,000
18	undergraduate psychological wellbeing report filetype:pdf	28/05/2020	7,700,000
19	undergraduate psychological disorder report filetype:pdf	28/05/2020	7,520,000
20	undergraduate psychological health report filetype:pdf	28/05/2020	24,400,000
21	undergraduate psychological illness report filetype:pdf	29/05/2020	5,860,000
22	undergraduate stress report filetype:pdf	29/05/2020	17,200,000
23	undergraduate distress report filetype:pdf	29/05/2020	2,670,000
24	undergraduate emotional health report filetype:pdf	29/05/2020	18,700,000
25	undergraduate emotional wellbeing report filetype:pdf	29/05/2020	5,380,000
26	undergraduate emotional disorder report filetype:pdf	29/05/2020	5,330,000
27	university mental illness report filetype:pdf	29/05/2020	89,100,000
28	university mental disorder report filetype:pdf	29/05/2020	70,700,000
29	university mental health report filetype:pdf	29/05/2020	287,000,000
30	university mental wellbeing report filetype:pdf	29/05/2020	104,000,000
31	university psychological wellbeing report filetype:pdf	29/05/2020	62,600,000
32	university psychological disorder report filetype:pdf	29/05/2020	83,300,000
33	university psychological health report filetype:pdf	29/05/2020	149,000,000
34	university psychological illness report filetype:pdf	29/05/2020	54,300,000
35	university stress report filetype:pdf	29/05/2020	242,000,000
36	university distress report filetype:pdf	29/05/2020	60,900,000
37	university emotional health report filetype:pdf	29/05/2020	150,000,000
38	university emotional wellbeing report filetype:pdf	29/05/2020	75,500,000
39	university emotional disorder report filetype:pdf	29/05/2020	39,100,000
40	student mental illness research filetype:pdf	29/05/2020	64,200,000

41	student mental disorder research filetype:pdf	01/06/2020	93,700,000
42	student mental health research filetype:pdf	01/06/2020	179,000,000
43	student mental wellbeing research filetype:pdf	01/06/2020	49,600,000
44	student psychological wellbeing research filetype:pdf	01/06/2020	83,600,000
45	student psychological disorder research filetype:pdf	01/06/2020	38,400,000
46	student psychological health research filetype:pdf	01/06/2020	59,500,000
47	student psychological illness research filetype:pdf	01/06/2020	40,400,000
48	student stress research filetype:pdf	01/06/2020	147,000,000
49	student distress research filetype:pdf	01/06/2020	42,300,000
50	student emotional health research filetype:pdf	01/06/2020	73,300,000
51	student emotional wellbeing research filetype:pdf	02/06/2020	55,500,000
52	student emotional disorder research filetype:pdf	02/06/2020	28,600,000
53	undergraduate mental illness research filetype:pdf	02/06/2020	8,720,000
54	undergraduate mental disorder research filetype:pdf	02/06/2020	8,020,000
55	undergraduate mental health research filetype:pdf	02/06/2020	21,700,000
56	undergraduate mental wellbeing research filetype:pdf	02/06/2020	7,180,000
57	undergraduate psychological wellbeing research filetype:pdf	02/06/2020	9,860,000
58	undergraduate psychological disorder research filetype:pdf	02/06/2020	8,030,000
59	undergraduate psychological health research filetype:pdf	02/06/2020	21,000,000
60	undergraduate psychological illness research filetype:pdf	02/06/2020	6,800,000
61	undergraduate stress research filetype:pdf	02/06/2020	18,200,000
62	undergraduate distress research filetype:pdf	02/06/2020	3,460,000
63	undergraduate emotional health research filetype:pdf	02/06/2020	14,400,000
64	undergraduate emotional wellbeing research filetype:pdf	02/06/2020	8,190,000
65	undergraduate emotional disorder research filetype:pdf	02/06/2020	5,930,000
66	university mental illness research filetype:pdf	02/06/2020	57,200,000
67	university mental disorder research filetype:pdf	02/06/2020	129,000,000
68	university mental health research filetype:pdf	02/06/2020	224,000,000
69	university mental wellbeing research filetype:pdf	02/06/2020	72,600,000
70	university psychological wellbeing research filetype:pdf	02/06/2020	81,900,000
71	university psychological disorder research filetype:pdf	02/06/2020	78,100,000
72	university psychological health research filetype:pdf	02/06/2020	141,000,000
73	university psychological illness research filetype:pdf	02/06/2020	50,000,000
74	university stress research filetype:pdf	02/06/2020	230,000,000
75	university distress research filetype:pdf	02/06/2020	63,200,000
76	university emotional health research filetype:pdf	02/06/2020	102,000,000
77	university emotional wellbeing research filetype:pdf	02/06/2020	67,500,000
78	university emotional disorder research filetype:pdf	02/06/2020	54,500,000
79	mental illness report filetype:pdf site:www.nus.org.uk	06/06/2020	18
80	mental disorder report filetype:pdf site:www.nus.org.uk	06/06/2020	18
81	mental health report filetype:pdf site:www.nus.org.uk	06/06/2020	42
82	mental wellbeing report filetype:pdf site:www.nus.org.uk	07/06/2020	27
83	psychological wellbeing report filetype:pdf site:www.nus.org.uk	07/06/2020	12
84	psychological disorder report filetype:pdf site:www.nus.org.uk	07/06/2020	7

85	psychological health report filetype:pdf site:www.nus.org.uk	07/06/2020	21
86	stress report filetype:pdf site:www.nus.org.uk	07/06/2020	48
87	distress report filetype:pdf site:www.nus.org.uk	07/06/2020	19
88	emotional health report filetype:pdf site:www.nus.org.uk	07/06/2020	19
89	emotional wellbeing report filetype:pdf site:www.nus.org.uk	07/06/2020	14
90	mental illness research filetype:pdf site:www.nus.org.uk	07/06/2020	14
91	mental disorder research filetype:pdf site:www.nus.org.uk	07/06/2020	15
92	mental health research filetype:pdf site:www.nus.org.uk	07/06/2020	41
93	mental wellbeing research filetype:pdf site:www.nus.org.uk	07/06/2020	27
94	psychological wellbeing research filetype:pdf site:www.nus.org.uk	07/06/2020	12
95	psychological disorder research filetype:pdf site:www.nus.org.uk	07/06/2020	7
96	psychological health research filetype:pdf site:www.nus.org.uk	07/06/2020	20
97	stress research filetype:pdf site:www.nus.org.uk	07/06/2020	49
98	distress research filetype:pdf site:www.nus.org.uk	07/06/2020	20
99	emotional health research filetype:pdf site:www.nus.org.uk	07/06/2020	21
100	emotional wellbeing research filetype:pdf site:www.nus.org.uk	07/06/2020	15
101	report filetype:pdf site:www.studentminds.org.uk	07/06/2020	101
102	research filetype:pdf site:www.studentminds.org.uk	07/06/2020	141
103	student report filetype:pdf site:www.mind.org.uk	07/06/2020	70
104	undergraduate report filetype:pdf site:www.mind.org.uk	07/06/2020	4
105	university report filetype:pdf site:www.mind.org.uk	07/06/2020	156
106	student research filetype:pdf site:www.mind.org.uk	07/06/2020	115
107	undergraduate research filetype:pdf site:www.mind.org.uk	07/06/2020	3
108	university research filetype:pdf site:www.mind.org.uk	07/06/2020	142

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