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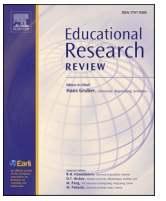

Aligning interventions with the University Mental Health Charter: A stratified review of reviews of mental health and wellbeing interventions for higher education students

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ABSTRACT

This stratified review of reviews evaluates the alignment of mental health and wellbeing interventions for higher education students within the University Mental Health Charter's domains. A narrative synthesis of 341 studies was conducted, extracted from 265 reviews. Interventions were stratified by the Mental Health Charter's domains—Live, Learn, and Support—and analysed for their impact on mental health outcomes. The "Live" domain, particularly proactive interventions and mentally healthy environments, had the highest number of studies, predominantly conducted via Randomised Controlled Trials. The "Learn" domain largely comprised quasi-experimental studies, while the "Support" domain featured pre-post designs without control groups. Interventions were primarily conducted in person and were universal, targeting undergraduate students, with North America being the most frequent research location. For the most frequent mental health outcomes (anxiety, depression, and stress), interventions showed mixed effectiveness across all domains, with no significant association between the type of intervention and its impact. Most studies were rated as having medium evidence strength, with less than 10 % classified as strong evidence. The findings highlight a critical need for diversified research focusing on underrepresented areas within the Mental Health Charter, such as academic progression and partnerships with external care providers. Additionally, there is a call for standardised outcome measures to enhance the robustness of future meta-analyses and the overall evidence quality. Addressing these gaps will support the effective implementation of a whole-university approach to student mental health.

1. Introduction

The prevalence of severe symptoms of common mental illness among this group has increased since the early '90s (McManus et al., 2016) and today over 40 % meet the criteria for a probable mental illness (Tabor et al., 2021). In this context, it is perhaps unsurprising that concern for student mental health has exploded (Dachew et al., 2019; Gao et al., 2020; Sharp & Theiler, 2018; Sheldon et al., 2021;

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Stallman, 2010).

Though the prevalence of mental illness is lower among the student population than among age-matched peers not in higher education (Gunnell et al., 2020; Tabor et al., 2021), the transition to higher education is still an important time of developmental sensitivity, where psychological, social, and vocational pathways are laid down and young people develop independence (Duffy et al., 2019; McGorry et al., 2007). Poor mental health can lead to a cycle of dysfunction and disadvantage that is difficult to break. Attending higher education can be a transformational experience; graduates, including those from low-income backgrounds, are more likely to be employed, enjoy higher wages, and experience better job satisfaction (Hosein et al., 2023; Milburn, 2012; Montenegro & Patrinos, 2014; Van der Berg & Van Broekhuizen, 2012). However, poor mental health makes it harder to engage with studies, undermining the opportunities higher education provides and contributing to attrition and reduced educational outcomes (Auerbach et al., 2016; Auerbach et al., 2018; Bantjes et al., 2021).

Students demand for mental health services has been rising (Thorley, 2017). Traditional reactive and individual services cannot meet this demand (Hughes & Spanner, 2019; Thorley, 2017) and one-to-one clinical interventions face multiple barriers to accessibility (Broglia et al., 2018; Seamark & Gabriel, 2018). There have been calls for higher education providers to do more (Brill, 2015; Brown, 2016; Thorley, 2017). In 2023, the UK government debated whether higher education providers should have a statutory duty of care (Hansard, 2023; LEARN Network, 2023; UGaP, 2023). Following the debate, the Minister for Skills, Apprenticeships and Higher Education requested that all UK higher education providers sign up to implement the University Mental Health Charter (Hughes & Spanner, 2019; Parliment, 2023). The Charter, developed from consensus consultations across the higher education sector in the UK, sets out a whole-university approach, including adequately resourced, effective, and accessible mental health services and proactive interventions (Hughes & Spanner, 2019). This builds upon international efforts such as the Okanagan Charter (2015), which calls on higher education institutions globally to embed health into all aspects of campus culture. Similarly, the University Mental Health Charter, takes a settings-based approach, and argues that higher education institutions must provide an environment and culture that reduces poor mental health, as well as supports good mental health, and facilitates staff and students in developing insight, understanding, and skills to manage and maintain their own wellbeing. These objectives are met through five domains of activity: Learn, Support, Live, Work and Enabling Factors. The first three domains, Learn, Support and Live, are student facing, and are the focus of this manuscript.

The "Learn" domain aims to navigate the nuanced journey of academic progression and personal development, during pivotal transitional periods into (Kift, 2015; Klaiber et al., 2018; Pennington et al., 2018) and through higher education (Hughes & Byrom, 2019; Morgan, 2013; Reino & Byrom, 2017; Tett et al., 2017), advocating for curriculum design and pedagogical strategies that support student mental wellbeing (Dyrbye et al., 2009; Houghton and Anderson, 2017; Hughes et al., 2022; Pakenham & Viskovich, 2019; Postareff et al., 2017; Slavin et al., 2014; Upsher, Nobili, et al., 2022; Upsher, Percy, Cappiello, et al., 2022; Upsher, Percy, Nobili, et al., 2022). Whilst recognising the importance of enhancing student wellbeing and minimising potential risks, the "Support" domain highlights a network of support services (Smithies & Byrom, 2018; Thorley, 2017) and risk mitigation strategies (Caul, 2018; Clements et al., 2005; Stanley et al., 2007), incorporating aspects of external partnerships (British Medical Association, 2017; Duffy et al., 2019) and strategic information sharing (Leach & Hall, 2011). Understanding the correlation between student wellbeing and their living and physical environments, the "Live" domain depicts the creation of supportive, integrative living and physical environments (Newton et al., 2016; Piper & Emmanuel, 2019), striving for comprehensive wellbeing through a considered approach to residential life (Brown et al., 2019; Holton, 2017; Piper & Tressler, 2017) and interventions to support social integration (Klaiber et al., 2018; McIntyre et al., 2018; Smithies and Byrom).

While The Charter is evidence-informed and supported by in-depth sector consultation (Brewster et al., 2022; Cage et al., 2021; Jones et al., 2021; Priestley, Broglia, et al., 2022; Priestley, Hall, et al., 2022; Wilbraham et al., 2024) there are significant knowledge gaps around how to meet the principles of The Charter. In writing to the higher education providers in the UK, the Minister for Skills, Apprenticeships and Higher Education acknowledged that there is no consensus on which interventions are most effective and that a "one-size-fits-all approach" would risk "stifling new and innovative practices"(Department for Education, 2024; WONKHE, 2023). The Student Mental Health Research Network's Priority Setting Exercise identified interventions and services as students' top research priority, with students seeking to understand how effective and accessible higher education mental health services are for a diverse student population, how effective the whole university approach is for student mental health, and whether non-clinical interventions can be beneficial to the student population (Sampson et al., 2022).

Previous reviews have explored a broad range of health interventions in higher education. For example, Dietz et al. (2020) conducted an umbrella review of health-related interventions for university students, highlighting both the diversity of intervention types and the challenges in synthesising evidence across disciplines and methodological designs. In 2021, Worsley et al. (2022) conducted a review of review-level evidence focused specifically on interventions supporting mental health and wellbeing of university and college students (Worsley et al., 2022). Reviewing the literature published up to 2020, they identified 27 reviews and recognised eight types of intervention: mindfulness-based interventions, psychological interventions, psychoeducation interventions, recreation programmes, relaxation interventions, setting-based interventions, suicide prevention, and stress management/reduction interventions. Aggregating a high-level summary of the findings of these reviews, they ascertained that there was a sizeable body of evidence on psychological interventions, including mindfulness and cognitive-behavioural interventions but a lack of evidence in other domains.

This is a research area of rapid development. We have sought to build upon and expand from Worsley's (2022) review in several ways. First, we aimed to update the literature by including reviews published between 2021 and 2023. Second, we conducted a secondary analysis of primary studies included within these systematic reviews, rather than relying solely on each review's conclusions. This allowed us to apply consistent eligibility criteria across studies, reclassify intervention types using a shared framework, and examine their alignment with the University Mental Health Charter.

We intentionally chose not to conduct an umbrella review, as such reviews can be limited by heterogeneity in the design, inclusion criteria, and synthesis methods of included reviews. Instead, we extracted and re-analysed individual studies within recent systematic reviews to enable consistent classification and mapping. Extracting data from individual studies within reviews allows synthesis of heterogeneous evidence from review-level studies, mitigating the limitations of umbrella reviews and supporting more precise synthesis (Biondi-Zoccai, 2016; Choi & Kang, 2022; Gates et al., 2020). Finally, by excluding psychological interventions, already well-evidenced, we focused specifically on alternative or complementary approaches relevant to the Charter's student-facing domains.

While the University Mental Health Charter is a UK-based policy framework, we included international studies to examine the extent to which globally implemented interventions align with the Charter's student-facing domains. This approach allows for the identification of transferable models that could inform UK-based implementation. Our decision is consistent with the approach taken by Worsley et al. (2022), who also incorporated global literature in their synthesis of higher education mental health interventions. Our review questions were:

1. How do the interventions that support higher education students' mental health or wellbeing align with those outlined in The University Mental Health Charter?
2. Stratified by the domains of The Charter, what is the impact of these intervention categories on mental health and wellbeing outcomes?
3. Stratified by the domains of The Charter, what is the strength of the evidence supporting these intervention categories?

2. Methods

This review of reviews was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The review protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO) (registration number: redacted for anonymity). Due to the extensive volume of literature in this area, a full primary-level review was not feasible. We therefore identified recent systematic reviews as a sampling frame and extracted eligible individual studies from within these reviews for further analysis.

2.1. Eligibility criteria

Eligibility criteria were applied in both the review of reviews and subsequent review of individual studies included within those reviews. Unless specified, the same criteria were applied at both stages of the review process.

Types of interventions: The review encompassed interventions delivered within a higher education setting that aimed to support student mental health or wellbeing, whether universal or targeted towards a specific subpopulation. Interventions could be preventative or curative. These interventions included but were not limited to, active or passive psychoeducation, pedagogical approaches, settings-based interventions, peer mentoring or support, recreational activities, physical activity programmes, and intersystem collaborations.

Given the clear conclusions from Worsley's review, which highlight a sizeable body of evidence on psychological interventions and their efficacy in effectively reducing common mental health difficulties, we have intentionally excluded psychological interventions from our review.

Types of studies: The review of reviews included systematic reviews of interventions aimed at improving higher education students' mental health or wellbeing. Individual studies included in these reviews could be of any design, including qualitative and quantitative research.

Types of participants: Students at any higher education institution worldwide, at any academic level (e.g., undergraduate, postgraduate taught or research) or subject discipline were considered.

Types of control conditions: Use of a control condition was *not* an inclusion criteria. For studies that included a control condition, comparisons could be made between the intervention and a control group, which might include a waiting list, or an alternative intervention.

Types of outcomes: Studies were included if they measured student mental health or wellbeing, for example: anxiety, depression, stress, wellbeing, self-efficacy, loneliness, mood, burnout, distress, resilience, eating disorder symptoms or behaviours, quality of life, and suicidal ideation. For qualitative studies, the research question and/or themes had to be oriented around higher education student mental health or wellbeing.

2.2. Information sources

A search was conducted for English-language articles published in MEDLINE, Web of Science, PsycINFO, and CINAHL from 1st January 2021 to 24th March 2023. Worsley et al. (2022)'s prior review covered literature until 31st December 2020; thus, the present review commenced from that date onward. The individual studies extracted from the reviews during this period could be from any date.

2.3. Search strategy

The search strategy was a replication of the Worsley et al. (2022) review of reviews. The search strategies involved a combination of

MeSH terms and free-text words related to higher education students, mental health, wellbeing, and review terms. See Appendix A for full search strategy.

2.4. Selection process

Four researchers (RU, TD, JW, SC) equally divided and screened the titles and abstracts of all retrieved reviews for eligibility. Subsequently, one researcher (TD) extracted individual studies from the included reviews. These individual studies were then screened for potential inclusion based on their titles and abstracts, followed by their full texts, a process conducted by three researchers (RU, TD, JW). Throughout all stages, any uncertainties regarding inclusion were addressed through discussions among the researchers during group meetings. Any remaining discrepancies were resolved by HL or NB.

2.5. Data collection process

A team of researchers (RU, TD, JW, LW, KR) supported by undergraduate and postgraduate taught student research fellows (n = 9) used a standardised Microsoft Excel form to extract data. This included fields corresponding to five over-arching categories: general study information, intervention details, study characteristics, participant characteristics, and mental health or wellbeing outcomes (see 2.7 for more detail). This form was pretested on a small subset of included studies to ensure its effectiveness and was modified as necessary. Any uncertainties concerning the details of data extraction were addressed through discussions among the researchers during group meetings. Collectively, the team ensured agreement with the extraction process, with two researchers (LW, KR) reviewing a selection of studies to validate consistency and accuracy. In instances of discrepancies, they were resolved by a third researcher, TD.

2.6. Data items

The following data was extracted from individual reviews:

1. General information: article title, year of publication, Harvard citation, DOI link, and study abstract.
2. Intervention details: intervention type, intervention alignment with the student-focused University Mental Health Charter domains (Learn, Support, Live) and their sub-themes (see Table 1); and mode of delivery (online or in-person). Intervention type included: recreational, physical activity, active psychoeducation, passive psychoeducation, pedagogy, settings-based, peer mentoring, and other.
3. Study characteristics: methodology, and location. The methodology described the study design through the following categories: qualitative, pre-post (no control), mixed methods, randomised controlled trial (RCT), quasi-experimental, and other (specified).
4. Participant characteristics: stage of student life cycle (pre-entry, undergraduate, postgraduate, other, not specified) and target population (e.g., all learners, course-specific, mental health difficulties, female learners, male learners, learners from minoritised ethnicity, international students, disabled students, LGBTQA + students, low-income family learners, mature learners, first-generation learners).
5. Outcomes: type of mental health or wellbeing outcome.

2.7. Synthesis methods

Given the diversity of the studies in terms of methods, populations, interventions, and outcomes, a narrative synthesis was applied to summarise the evidence. This approach offered a clear and accessible overview of both the direction and strength of the findings, including non-numerical data.

Based on mental health and wellbeing outcomes, each individual study was classified into one of four ‘sign of impact’ categories: positive, negative, no impact, or mixed; adapted from the Office for Students Evaluation Toolkit (Office for Students, 2019; TASO,

Table 1
Interventions stratified by Mental Health Charter domains and sub-themes.

Domains	Total N (%)	Sub-themes	N	Overall %	% within domain
Learn	81 (23.8)	Transition Into University	17	5.0	21.0
		Learning, Teaching, and Assessment	62	18.2	76.5
		Progression	2	.6	2.5
Support	56 (16.4)	Support Services	42	12.3	75.0
		Risk	14	4.1	25.0
		Information Sharing	0	.0	.0
		External Partnerships and Pathways	0	.0	.0
Live	204 (59.8)	Proactive interventions and a mentally healthy environment	190	55.7	93.1
		Social Integration and Belonging	14	4.1	6.9
		Residential Accommodation	0	.0	.0
		Physical Environment	0	.0	.0

2023; TASO, 2024). These classifications indicated the direction of the intervention's effect on mental health or wellbeing outcomes measured in each study. Studies rated as "positive" had all results for mental health or wellbeing outcomes trending positively, with a Cohen's d effect size of 0.1 or greater (whether significant or not). "Negative" ratings were applied to studies where all outcomes showed a negative trend, with a Cohen's d of 0.1 or greater. "Mixed" ratings applied to studies with both significant and non-significant positive and/or negative outcomes. Studies were rated as "no impact" when non-significant results showed no discernible correlation or effect direction.

Due to the heterogeneity of mental health and wellbeing outcomes, the three most frequent outcomes—anxiety, depression, and stress were synthesised and stratified by the mental health charter domains.

2.8. Quality assessment

The quality of the included studies was assessed by researchers based on the 'strength of evidence'. Individual studies were evaluated according to their research design and sample size before being rated as weak, emerging, medium, or strong, using criteria adapted from the Office for Students Evaluation Toolkit (Office for Students, 2019; TASO, 2023, 2024). This grading framework was designed to enhance transparency and allow comparability across a heterogeneous body of evidence. It was not used to exclude studies from the synthesis, nor did it impose a rigid hierarchy of evidence. Rather, it offered a way to describe the relative strength and nature of findings across different research designs and sample sizes. Weak evidence included qualitative studies lacking a theory of change or engagement with the literature, pre-post studies with small samples and no relevant data collection, and RCTs with irrelevant measures or no tests of statistical significance. Emerging evidence referred to qualitative data collection from small samples, pre-post studies

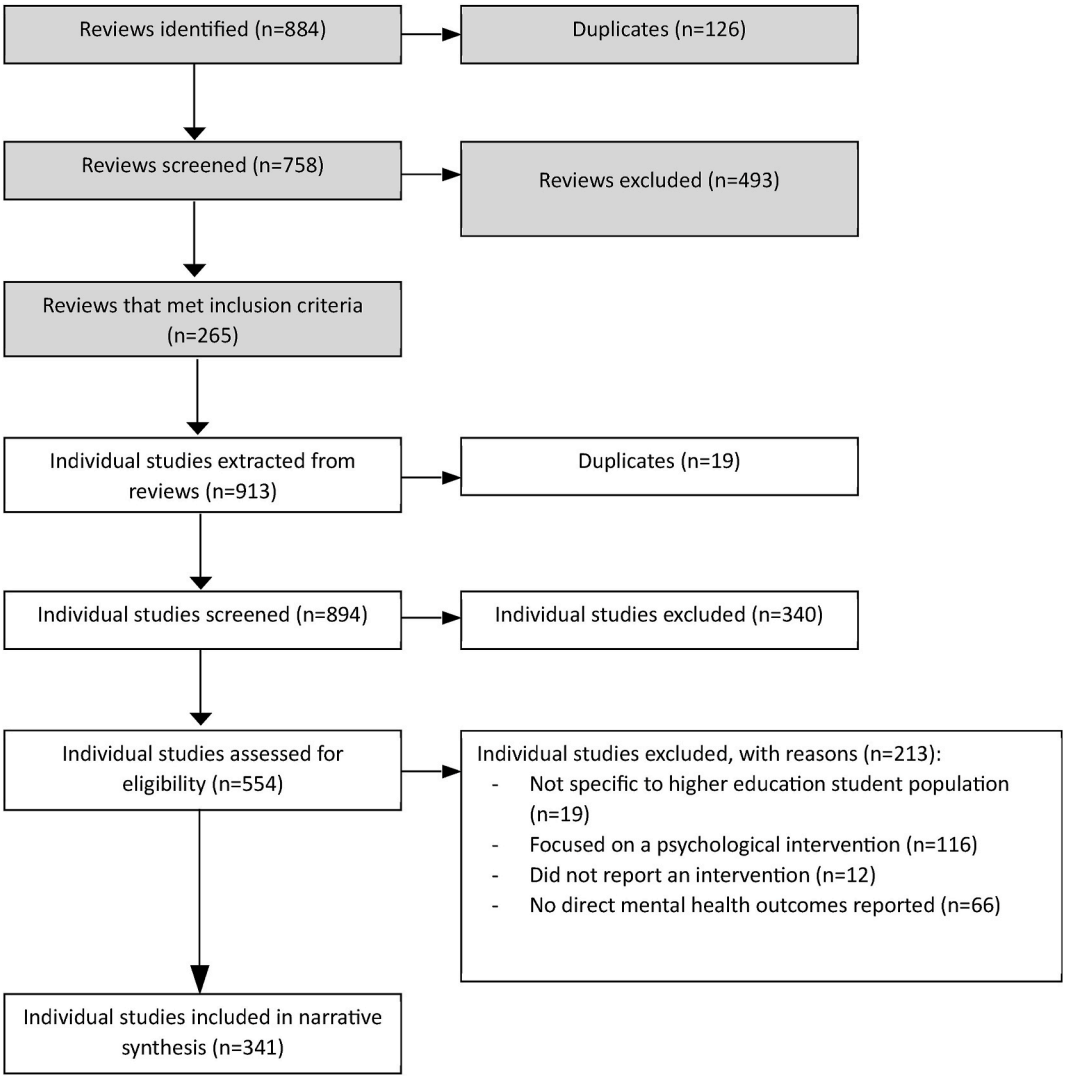

Fig. 1. Prisma flow diagram.

capturing attitudes using quantitative methods, and quasi-experimental designs with small samples and statistical significance achieved after multiple corrections. Medium evidence included qualitative studies with medium-sized samples and thematic analysis, pre-post studies using quantitative data without a control group, and small-sample RCTs or systematic reviews with small to medium effect sizes. Strong evidence encompassed qualitative studies with latent thematic analysis and validity checks, pre-post studies using validated instruments, and large-sample RCTs showing large effect sizes.

2.9. Data analysis

To assess the associations between categorical variables across different groups, Fisher-Freeman-Halton exact test with Monte Carlo simulations were conducted. This approach was chosen due to its suitability for handling small sample sizes and low expected frequencies in complex contingency tables, ensuring robust and accurate p-value estimation (Gray et al., 2017). Tests were conducted to assess the association between Mental Health Charter domains (Learn, Support, Live) and various factors: mode of delivery, research methodology, region of study, student life-cycle, target group, outcome, sign of impact, and strength of evidence. Additionally, a test was conducted to assess the association between the outcome and region of study.

3. Results

3.1. Study selection

The searches yielded 884 records of reviews. After duplicates were removed, this resulted in 758 reviews. Two-hundred and sixty-five reviews met inclusion criteria and 913 individual studies were extracted from these reviews. Nineteen duplicate individual studies were then removed, leaving 894 studies.

The titles and abstracts of the 894 individual studies were screened, excluding 340 records that did not meet the eligibility criteria. The remaining 554 full-text articles were assessed, of which 213 were excluded for the following reasons: not specific to a higher education student population (n = 19); focused on a psychological intervention (n = 116); did not report an intervention (n = 12), and no direct mental health outcomes reported (n = 66).

Three-hundred-and-forty-one individual studies met the inclusion criteria and were incorporated into the narrative synthesis, see PRISMA flow diagram, Fig. 1. See supplementary materials for list of included studies.

3.2. Study characteristics

The included reviews were published between January 1, 2021, and March 24, 2023. The individual studies extracted from the reviews spanned from 1982 to 2022, with the highest number of publications in 2017 with 41 studies (12 %), Fig. 2.

3.2.1. Intervention characteristics

Interventions were categorised by Mental Health Charter domains and sub-themes. The most frequent category of intervention was

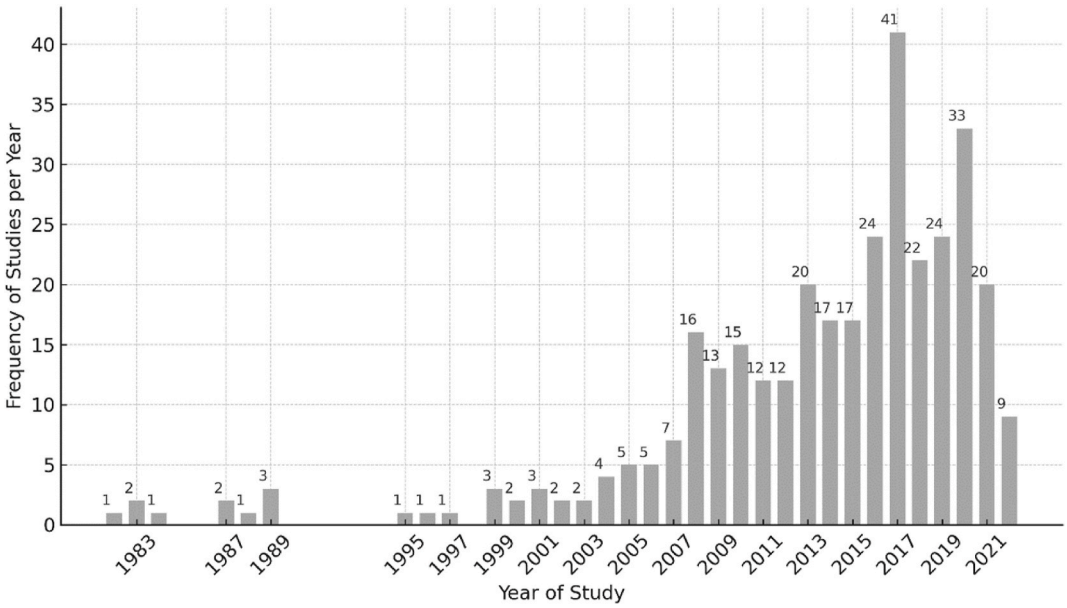

Fig. 2. Breakdown of studies included by year of publication.

the "Live" domain, and within this over half of all studies related to the sub-theme of 'Proactive interventions and a mental healthy environment,' see Table 1. Interventions considered within this theme included active (n = 76) and passive (n = 18) psychoeducation, delivered from various perspectives including, positive psychology (e.g.(Smith et al., 2021),), stress management (e.g. (Kim et al., 2018; Petersen, 2013),), emotional development (Schoeps et al., 2020) and resilience and coping strategies (e.g. (Steinhardt & Dolbier, 2008),). Peer-facilitated or peer-delivered interventions (n = 40) were identified in this theme including targeted interventions for specific problems, such as alcohol consumption (Tollison et al., 2008) or for specific groups, including Black students (Stoll et al., 2023). Peer-facilitated interventions included support groups (Conley et al., 2020), coaching (e.g. (Short et al., 2020),), mentoring (e.g., Collings et al., 2014) and co-operative learning (e.g.(Kocak, 2008),). This theme further included recreation (n = 27), such as visiting therapy dogs (e.g. (Barker et al., 2016),), engaging in expressive writing and creative arts (e.g. (Gee et al., 2019; Mohammadian et al., 2011),), and physical activity (n = 29) including aerobic exercise (e.g. (Broman-Fulks et al., 2004),), standing breaks in lectures (Paulus et al., 2021), Yoga (e.g. (Tong et al., 2021),)and Tai Chi (e.g.(Zheng et al., 2015),).

The most frequent sub-themes under the "Learn" domain and "Support" domain were 'Learning, Teaching and Assessment' and 'Support Services', respectively. Interventions in the Learning, Teaching and Assessment theme included changing the grading system (e.g. (Bloodgood et al., 2009),), altering the curriculum structure (e.g. (Slavin et al., 2014),), introducing stress, anxiety or wellbeing interventions into the curriculum (e.g. (Dyrbye et al., 2017),), peer learning (e.g. (Eren-Sisman et al., 2018),) and inclusion of simulations and virtual reality in teaching (e.g. (Bates et al., 2019; Demirel et al., 2020; Ross & Carney, 2017),). Interventions within the "Support" domain included interventions for eating disorders (e.g. (Franko et al., 2005),), substance abuse (e.g. (Bennett et al., 1996),), and stress management (e.g.(Bughi et al., 2006),). Active psychoeducation, embedded within specialist support services (n = 20) was also included in this category (e.g., (LaBrie et al., 2006; Zabinski et al., 2001).

Most interventions were conducted in person rather than being technology-based, this was a consistent pattern across all Mental Health Charter domains, Table 2. A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the mode of delivery and the domains (Learn, Support, Live). The test was not significant, $\chi^2(4, N = 341) = 6.79$, $p = .112$ (Monte Carlo 99 % CI [.10, .12]), indicating no strong evidence of an association between the mode of delivery and the different domains.

3.2.2. Study design characteristics

3.2.2.1. Research methodology. The most common methodology across all studies was RCTs (Table 2). However, there was some variation across domains. A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the methodology and the domains (Learn, Support, Live). The test was significant, $\chi^2(8, N = 341) = 426.58$, $p < .001$ (Monte Carlo 99 % CI [<.001, <.001]), indicating a significant difference in methodology across the different domains. The majority of studies within the "Learn" domain were quasi-experimental, pre-post (no control) in the "Support" domain and RCTs in the "Live" domain.

3.2.2.2. Region. The studies represented research conducted globally, with the highest number undertaken in North America. This was consistent across Mental Health Charter domains. Within Europe, excluding the UK (n = 25), Turkey had the highest number of studies (n = 15), followed by Germany (n = 7), Netherlands (n = 2), Spain (n = 3), and Sweden (n = 4), Austria (n = 2) and Finland (n = 2). France, Hungary, Italy, Portugal, and Romania each had one study.

Canada (n = 19) and the United States (n = 192) represented North America. Oceania included Australia (n = 17) and New Zealand (n = 2). South Asia included India (n = 3), Malaysia (n = 2), Indonesia (n = 1), Singapore (n = 1), and the Philippines (n = 1). East Asia included China (n = 14), Japan (n = 2), Taiwan (n = 3), and South Korea (n = 1). The Middle East included Iran (n = 5), Saudi Arabia (n = 1), Israel (n = 1), Lebanon (n = 1), and the United Arab Emirates (n = 1). Africa included South Africa (n = 5), Egypt (n = 1) and Tunisia (n = 1).

A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the region and the domains (Learn, Support, Live). The test was significant, χ^2 (14, N = 341) = 23.89, $p = .025$ (Monte Carlo 99 % CI [.02, .03]), indicating a significant association between the region and the different domains; 80 % of the research in the Support domain has taken place in North America, by contrast North America is less dominant in research into the Learn and Live domain, with 30 % of research in the Learn domain and 20 % of research in the Live domain occurring in Europe and the UK.

3.2.3. Participant characteristics

3.2.3.1. Student population. Most studies focused on an undergraduate population, see Table 2. A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the student life-cycle and the domains (Learn, Support, Live). The test was significant, $\chi^2(8, N = 341) = 21.23$, $p = .003$ (Monte Carlo 99 % CI [.002, .01]), indicating a significant association between the student life-cycle and the different domains. A higher proportion of studies within the "Learn" domain were focused on undergraduate students whereas within the "Live" domain, there was a higher proportion of studies where the target student group was not specified.

3.2.3.2. Target group. In the majority of studies, the intervention did not target a specific student group, i.e., it was a universal intervention. A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the target group and the domain (Learn, Support, Live). The test was significant, χ^2 (20, N = 430) = 84.50, $p < .001$ (Monte Carlo 99 %

Table 2
Characteristics of studies stratified by mental health charter Domain.

Characteristic		Total N (%)	Learn N (%)*	Support N (%)*	Live N (%)*
Total N		341	81	56	204
Intervention type	Active Psychoeducation	125 (37)	27 (33)	22 (39)	76 (37)
	Peer Mentoring	64 (19)	15 (19)	8 (14)	41 (20)
	Recreational	34 (10)	3 (4)	4 (7)	27 (13)
	Physical Activity	34 (10)	1 (1)	4 (7)	29 (14)
	Pedagogy	26 (8)	25 (31)	-	1 (1)
	Other	28 (8)	6 (7)	11 (20)	11 (6)
	Passive Psychoeducation	22 (6)	2 (2)	2 (4)	18 (9)
	Settings Based	8 (2)	2 (2)	5 (9)	1 (1)
Mode of Delivery	In Person	263 (77)	71 (88)	43 (77)	149 (73)
	Technology-based	61 (18)	9 (11)	9 (16)	43 (21)
	In Person & Technology-based	10 (3)	1 (1)	2 (4)	7 (3)
	Other	6 (2)	-	2 (5)	4 (3)
Methodology	Randomised Controlled Trial (RCT)	127 (37)	11 (14)	19 (34)	97 (48)
	Pre-post (no control)	79 (23)	19 (23)	21 (38)	39 (19)
	Quasi-experimental	82 (24)	35 (43)	9 (16)	38 (19)
	Mixed-methods	37 (11)	11 (14)	5 (9)	21 (10
	Qualitative	16 (5)	5 (6)	2 (4)	9 (4)
Region	North America	211 (62)	44 (54)	45 (80)	122 (60)
	Europe	42 (12)	15 (19)	1 (2)	26 (13)
	UK	25 (7)	9 (11)	1 (2)	15 (7)
	East Asia	20 (6)	2 (2)	4 (7)	14 (7)
	Oceania	19 (6)	5 (6)	4 (7)	10 (5)
	Middle East	9 (3)	1 (1)	-	8 (4)
	Africa	7 (2)	3 (4)	-	4 (2)
	South Asia	8 (2)	2 (2)	1 (2)	5 (2)

	Undergraduate	255 (66)	66 (81)	34 (61)	125 (61)
	Not specified	55 (16)	2 (2)	8 (14)	45 (22)
Student Population	Undergraduate and Postgraduate	33 (10)	5 (6)	9 (16)	19 (9)
	Pre Entry	13 (4)	4 (5)	2 (4)	7 (3)
	Postgraduate	10 (3)	3 (4)	2 (4)	5 (2)
	Other	5 (1)	1 (1)	1 (2)	3 (1)
Target Group	All learners	145 (43)	28 (35)	15 (27)	102 (50)
	Course Specific	92 (27)	45 (57)	9 (16)	43 (21)
	Mental Health Difficulties	50 (16)	2 (2)	24 (43)	24 (12)
	Female learners	14 (4)	-	1 (2)	13 (6)
	Multiple**	12 (3)	-	3 (5)	9 (4)
	Learners from minoritized ethnicity	9 (3)	1 (1)	1 (2)	7 (3)
	International students	3 (1)	2 (2)	-	1 (0)
	Disabled	5 (1)	1 (1)	3 (5)	1 (0)
	LGBTQA+	1 (1)	-	-	1 (0)
	Male learners	3 (1)	1 (1)	-	2 (1)

Note: The grey shading denotes the highest proportion within each domain.

*Percentage within each domain

**Target group (multiple)=female learners from minoritized ethnicity (n=3), female learners with mental health difficulties (n=6), first-generation learners from minoritized ethnicity (n=1), international first generation learners (n=1), LGBTQA+ learners with mental health difficulties (n=1)

CI [<.001, <.001]), indicating a significant association between the target group and the different domain. Within the "Learn" domain, the majority of interventions focused on a specific course of academic study. Within the "Support" domain, the most common target group of interventions was students with mental health difficulties.

3.2.4. *Outcome characteristics*

All studies measured outcomes related to mental health and wellbeing, as this was an inclusion criterion for the review. There was a huge variety of outcomes including general mental health or wellbeing (n = 53, 16 %), loneliness (n = 11, 3 %), mood (n = 9, 3 %), burnout (n = 6, 2 %), distress (n = 8, 2 %), resilience (n = 14, 4 %), disordered eating (n = 11, 3 %), quality of life (n = 9, 3 %), suicidal ideation (n = 8, 2 %).

Anxiety, depression, and stress were the most frequently reported outcomes across all studies and were consequently stratified by the Mental Health Charter domains (see Table 3). Over half of the studies measured anxiety, depression, stress, or a combination of these (n = 174, 51 %). Twenty-one studies (6 %) measured all three outcomes, while a further 34 studies (10 %) measured two of these outcomes.

A chi-square test of independence was conducted to examine the relationship between the mental health outcomes (Anxiety, Depression, Stress) and the domains (Learn, Support, Live). The test was significant, $\chi^2(4, N = 251) = 11.24$, $p = .024$, indicating a

Table 3
Breakdown of Stress, Anxiety & Depression outcomes by Mental Health Charter domains.

Category	Total N (%)	Learn N (%)*	Support N (%)*	Live N (%)*
Anxiety	90 (26)	23 (28)	13 (23)	54 (26)
Depression	69 (20)	5 (6)	14 (25)	50 (25)
Stress	92 (27)	25 (31)	13 (23)	54 (26)

Note: The grey shading denotes the highest proportion within each domain. Column percentages will not total 100% as not all studies measured these outcomes. Also, studies are not independent; i.e. some studies measured a combination of these outcomes.

*Percentage within each domain

significant association between mental health outcomes and the different domains. Stress was the most frequently measured outcome in the "Learn" domain. Depression was the most frequently reported outcome in both the "Support" domain, and anxiety and stress were most frequent in the "Live" domain.

As shown in Table 4, the distribution of these outcomes was compared across different regions. A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between regions and outcomes (anxiety, depression, stress). The test was not significant, $\chi^2(14, N = 251) = 9.59$, $p = .982$ (Monte Carlo 99 % CI [.98, .99]), indicating no significant association between the region and these outcomes.

3.3. Quality assessment

3.3.1. Strength of evidence

Across all studies, the strength of evidence was mostly rated 'Medium evidence' (Table 5). Less than 10 % of all research reviewed could be classified as strong evidence.

A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the strength of evidence and the domains (Learn, Support, Live). The test was significant, χ^2 (6, N = 341) = 32.20, $p < .001$ (99 % CI [<.001, <.001]), indicating a significant association between the strength of evidence and the different domains. This result suggests that the distribution of evidence strength differs significantly across these domains. In contrast to the "Support" and "Live" domains, in the "Learn" domain, the strength of evidence was mainly rated as 'Emerging evidence'.

3.4. Results of syntheses

3.4.1. Sign of impact

Across all domains, the most common sign of impact was mixed. Mixed impact indicated that there were both positive and negative signs of impact, most often in cases where studies used multiple mental health and wellbeing outcomes, see Table 5. Less than half of all studies could be classified as having an overall positive impact.

A Fisher-Freeman-Halton exact test using Monte Carlo simulation was conducted to examine the relationship between the sign of impact and the domains (Learn, Support, Live). The test was not significant, $\chi^2(10, N = 341) = 9.64$, $p = .425$ (99 % CI [.41, .44]), indicating that there was no significant association between the sign of impact and the different domains.

Table 4
Most Frequent Mental Health and Wellbeing outcomes by region.

Region	Total N	Anxiety N (%)[a]	Depression N (%)[a]	Stress N (%)[a]
North America	211	50 (24)	41 (19)	59 (28)
Europe	42	13 (31)	7 (17)	13 (31)
UK	25	6 (24)	3 (12)	3 (12)
East Asia	20	7 (35)	6 (30)	4 (20)
Oceania	19	5 (26)	4 (21)	4 (21)
Middle East	9	3 (33)	3 (33)	4 (44)
South Asia	8	5 (63)	4 (50)	3 (38)
Africa	7	1 (14)	1 (14)	2 (29)

[a] Row percentages.

Table 5
Sign of impact and strength of evidence by Mental Health Charter Domains.

		Total N (%)	Learn N (%)*	Support N (%)*	Live N (%)*
	Total N	341	81	56	204
Sign of Impact	Large positive	25 (7)	4 (5)	3 (5)	18 (9)
	Small positive	86 (25)	23 (28)	17 (30)	46 (23)
	Mixed	152 (45)	30 (37)	23 (41)	99 (49)
	No impact	68 (20)	21 (26)	11 (20)	36 (18)
	Small negative	8 (2)	3 (4)	2 (4)	3 (1)
	Large negative	2 (1)	-	-	2 (1)
Strength of Evidence	Strong	28 (8)	7 (9)	4 (7)	17 (8)
	Medium	133 (39)	13 (16)	30 (54)	90 (44)
	Emerging	132 (39)	50 (62)	17 (30)	65 (32)
	Weak	48 (14)	11 (14)	5 (9)	32 (16)

Note: The grey shading denotes the highest proportion within each domain.

*Percentage within each domain

4. Discussion

This review has expanded upon a previous review (Worsley et al., 2022), establishing an updated understanding of the current literature regarding interventions to support the mental health and wellbeing of higher education students. By reviewing individual papers included in reviews, we have been able to provide a fine-grained synthesis of the literature, including assessments of evidence quality. We have observed an explosion in relevant literature. Utilising the same search strategy as Worsley, we identified 265 eligible reviews within two years compared to the 27 reviews over 20 years noted in Worsley's review. The increase in literature aligns with a broader recognition of mental health issues in higher education settings (Upsher, Nobili, et al., 2022).

Mapping individual studies against The University Mental Health Charter provided a structured framework to assess and contextualise the existing evidence. Our findings illustrate that while research is taking place across the three student-focused areas of The Charter (Learn, Live, Support), there is considerably more research dedicated to understanding 'proactive interventions and mentally healthy environments' subtheme than any other area. In comparison, interventions within the subthemes of the "Learn" and "Support" domains were less studied. Moving forward, we require evidence across all The Charter sub-themes to inform the effective implementation of the whole-university approach to student mental health. There are particular gaps in our knowledge of the mental health impacts of interventions related to supporting academic progression, the impact of information sharing, the effect of fostering partnerships between higher education providers and external care providers such as the NHS, the effects of interventions related to or delivered in residential accommodation and the impact of alterations to the physical environment (Bachert et al., 2021). There is considerably more research addressing the impact of discrete interventions that can be offered on an ad hoc basis than interventions that address the ethos of a whole-institution approach.

This review further underscores the need for more research beyond North America, where most evidence is concentrated. With significant differences between the American higher education systems and institutions in other countries (Readings & Maclntyre, 1996), it is unlikely that innovation in America will translate readily to higher education providers in other contexts. More specific research focusing on target groups, including postgraduate and international students, female, minoritised ethnic, neurodiverse, and LGBTQA + learners, is also necessary (Clouder et al., 2020).

As now commonly observed (Dodd et al., 2021; Upsher, Nobili, et al., 2022), this review further underscores the necessity for a consensus on measures of student mental health; the studies encompassed a wide range of mental health outcomes, predominantly stress, anxiety, and depression. However, even within these most frequent outcomes, the measures varied significantly. Moving forward, more high-quality evidence and consensus on measures of student wellbeing must be established, supporting the ability to conduct more robust analyses in future research. Meta-analyses are important as they enable a statistically robust synthesis of data,

providing more definitive evidence of effectiveness and facilitating a better understanding of the variability and applicability of interventions across diverse contexts and populations (Cooper et al., 2019). Furthermore, they allow for the identification and exploration of potential moderators and mediators of intervention effects, offering detailed insights that can guide future intervention development and implementation in a more targeted and effective manner. Meta-analyses require homogenous outcome measures.

Most studies presented a mixed sign of impact on student mental health outcomes, meaning that there were variable levels of effectiveness. A small number of studies found a negative impact, indicating that certain interventions may have inadvertently worsened mental health conditions or failed to address the specific needs of certain student groups effectively. The 'mixed' sign of impact observed in many studies indicates the measurement of multiple outcomes within a single study, with some interventions demonstrating a positive effect on certain outcomes and others showing null or negative impacts. This highlights broader methodological challenges, including attempting to measure too many variables simultaneously and a lack of clarity around the selection and definition of outcome measures (Gask et al., 2012).

Evaluating the robustness and rigour of the evidence, we identified that the majority of studies within the Support and Live domains were categorised as 'medium' in terms of evidence strength. For the Learn domain, most studies were predominantly categorised under 'emerging' evidence. Few studies were rated 'strong' across all domains, underscoring a need for improving the quality and robustness of research within this field. To attain a classification of strong evidence, studies must exhibit a robust design, utilise validated or robust measures and methods of analysis, and/or employ a sufficiently large sample size. The prevalent medium and emerging strength ratings indicate the need for improvement and refinement in the evidence base to comprehensively understand and ascertain the true effectiveness of interventions aimed at improving higher education students' mental health and wellbeing. One contributing factor may be inconsistent reporting, which limits the ability to assess study quality and replicate interventions. To address this, reporting guidelines such as the CLOSER checklist (for writing up educational interventions) and the CIDER checklist (for detailing intervention components) can support more rigorous and transparent reporting (Upsher et al., 2025).

4.1. Strengths and limitations

Contrary to the broad summary approach by Worsley et al. (2022), our methodological enhancement involved an expansive synthesis, exploring individual studies incorporated in review papers rather than solely summarising the overarching findings of the reviews. This methodology allowed a detailed examination of individual studies, summarising characteristics of interventions, populations, and outcomes. Therefore, we were able to not only assess trends and variances of interventions within The University Mental Health Charter domains but also highlight critical research gaps that necessitate further exploration to address student mental health needs within a whole university approach.

A limitation of this review was that a meta-analysis was not possible due to the heterogeneity across studies in terms of populations, intervention types, outcomes, and study design. This heterogeneity reduces the ability to generate synthesised quantitative findings and, subsequently, generalised conclusions about the effectiveness of various interventions across contexts and populations. Consequently, while this review offers a comprehensive narrative synthesis, the ability to quantitatively aggregate findings to provide an overarching assessment of intervention effectiveness is limited.

We did not distinguish between specific mental health outcomes within the sign of impact assessment. This decision was made to allow for a synthesis of evidence across all studies, rather than limiting our analyses to subgroups based on specific mental health outcomes. While this approach facilitated a broader and more inclusive overview of intervention impacts, it may have obscured nuanced effects of interventions on particular aspects of mental health or wellbeing. These nuances could be critical for tailoring interventions to address specific needs. Future reviews could benefit from a more granular analysis, particularly where different outcomes may trend in opposing directions, to better capture the complexity of intervention impacts.

While we applied a structured framework to describe the strength of included studies, we acknowledge that this form of grading cannot fully capture the nuance of study context or implementation quality. It should be interpreted as a descriptive tool to enhance transparency, not as a definitive hierarchy of evidence.

The review focused on areas of the Mental Health Charter that were directly relevant for students. This focus on the Live, Learn, and Support domains was chosen to ensure a targeted and in-depth analysis of interventions impacting core aspects of student life. However, this meant that the domains of Work and Enabling Factors, which are equally important in a whole university approach, were not included. While these organisational factors are essential to effective implementation, they were inconsistently reported across included studies and could not be reliably coded. Future research may wish to systematically examine enabling factors to complement the student-focused evidence base.

Furthermore, this review included only studies published in the English language. Although this could potentially limit the generalisability of our findings, we were nonetheless able to identify studies from a diverse range of global contexts.

4.2. Conclusion

While this review highlights the increasing attention toward student mental health and wellbeing, the critical necessity of advancing methodological rigour, and diversifying intervention types across the whole university to extend exploration into less-studied Mental Health Charter domains is important. This will not only enhance the applicability and reliability of the interventions but also facilitate a cohesive and comprehensive approach toward supporting student mental health and wellbeing across the multifaceted and multidimensional contexts within higher education settings.

Moving forward, attention to methodological robustness, innovative intervention development, and adherence to, as well as

critical appraisal against, structured frameworks such as the University Mental Health Charter, is imperative to assure that higher education providers are informed by a reliable evidence-base in developing and implementing interventions to safeguard and enhance the mental health and wellbeing of their students.

Preregistration

The review protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO) (registration number: CRD42023434564).

Author statement

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Declaration of interest statement

The authors declare no competing interests.

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Appendix. ASupplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.edurev.2025.100716.

Appendix A

MEDLINE

N^{o}	Terms
1	(university student* OR undergraduate student* OR postgraduate student* OR college student* OR tertiary student* OR higher education OR tertiary education).ti,ab.
2	(mental OR wellbeing OR well-being OR depress* OR anxi* OR stress* OR resilience OR wellness OR coping OR mindfulness OR cognitive OR behavioural OR mediation).ti,ab.
3	(review OR synthes* OR meta-analysis OR overview).ti,ab.
4	AND 1-3
5	Limit 4 to English Language, Humans, January 2021 to current

Web of Science

N°	Terms
1	TS=("university student*" OR "undergraduate student*" OR "postgraduate student*" OR "college student*" OR "tertiary student*" OR "higher education" OR "tertiary education")
2	TS=(mental OR wellbeing OR well-being OR depress* OR anxi* OR stress* OR resilience OR wellness OR coping OR mindfulness OR cognitive OR behavioural OR mediation)
3	TS=(review OR synthes* OR meta-analysis OR overview)
4	AND 1-3
5	Limit 4 to English Language, Humans, and January 2021 to current

PsycINFO

N°	Terms
1	(TI ((“university student*” OR “undergraduate student*” OR “postgraduate student*” OR “college student*” OR “tertiary student*” OR “higher education” OR “tertiary education”))) OR (AB ((“university student*” OR “undergraduate student*” OR “postgraduate student*” OR “college student*” OR “tertiary student*” OR “higher education” OR “tertiary education”)))
2	(TI ((mental OR wellbeing OR well-being OR depress* OR anxi* OR stress* OR resilience OR wellness OR coping OR mindfulness OR cognitive OR behavioural OR mediation))) OR (AB ((mental OR wellbeing OR well-being OR depress* OR anxi* OR stress* OR resilience OR wellness OR coping OR mindfulness OR cognitive OR behavioural OR mediation)))
3	(TI ((review OR synthes* OR meta-analysis OR overview))) OR (AB ((review OR synthes* OR meta-analysis OR overview)))
4	AND 1-3
5	# 3 Limited to English Language, and January 2021 to current

CINAHL

N°	Terms
1	(TI ((“university student*” OR “undergraduate student*” OR “postgraduate student*” OR “college student*” OR “tertiary student*” OR “higher education” OR “tertiary education”))) OR (AB ((“university student*” OR “undergraduate student*” OR “postgraduate student*” OR “college student*” OR “tertiary student*” OR “higher education” OR “tertiary education”)))
2	(TI ((mental OR wellbeing OR well-being OR depress* OR anxi* OR stress* OR resilience OR wellness OR coping OR mindfulness OR cognitive OR behavioural OR mediation))) OR (AB ((mental OR wellbeing OR well-being OR depress* OR anxi* OR stress* OR resilience OR wellness OR coping OR mindfulness OR cognitive OR behavioural OR mediation)))
3	(TI ((review OR synthes* OR meta-analysis OR overview))) OR (AB ((review OR synthes* OR meta-analysis OR overview)))
4	AND 1-3
5	# 3 Limited to English Language, and January 2021 to current

Data availability

Data will be made available on request.

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