The Impact of Mental Health Literacy Training Programs on the Mental Health Literacy of University Students: a Systematic Review

Arianne C. Reis[1] · Rowena Saheb[1] · Taurai Moyo[1] · Caroline Smith[1] · Sandro Sperandei[1]

Abstract

Student mental health is of growing concern for the university education sector. Supporting opportunities to increase mental health literacy of students is one strategy in which universities and colleges are actively investing to support students build their capacity to be well. This study is a systematic review of mental health literacy training (MHLT) programs, other than Mental Health First Aid training, to examine their impact on the mental health literacy of university students. The review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (Online Resource 1) and A Measurement Tool to Assess Systematic Reviews (AMSTAR2) guidelines. Search terms related to mental health literacy concepts, mental health literacy training and university students were used in four major databases (i.e. EBSCOhost, Ovid, ProQuest and Web of Science), retrieving a total of 1219 articles, with 44 studies selected for full-text review, and a final number of 24 studies included for review based on pre-determined eligibility criteria. Results were reported against three main themes: types of MHLT offered; common practices, processes and implementation elements; and effectiveness of intervention. Results indicate a high level of variability in approaches to mental health literacy interventions and measures of assessment and reporting. Additionally, reported benefits to mental health literacy failed to report on comparable units of improvement or the sustainability of benefits. Although it is in the best interest of universities to prioritise early intervention programs to address mental health and improve wellbeing, more robust data is required to establish the effectiveness of MHLT programs in achieving this aim.

Keywords Mental health literacy · University students · Help-seeking · Training

Introduction

Student mental health issues are a significant challenge for the university sector, with research findings showing that the general population of students, typically within the 18–25 age range, present high levels of mental ill-health (Ashoorian et al., 2019; Burns et al., 2017; Davies et al., 2016; Kelly & Birks, 2017). A systematic review found that prevalence of depression among university students range from 10 to 85%, with a weighted mean prevalence of 30.6% (Ibrahim et al., 2013). A more recent review, this time focusing on university students in low- and middle-income countries, found that almost one quarter (24.4%) of students present symptoms of depression (Akhtar et al., 2020). Furthermore, in comparison

to their peers who are currently not pursuing university education, students have been found to be more prone to mental ill-health (Burns et al., 2017; Evans et al., 2018; Leahy et al., 2010). Although recent studies (Cvetkovski et al., 2019; Tabor et al., 2021) have challenged these findings, the World Health Organisation (WHO) has still classified student mental health to be a critical public health issue (Storrie et al., 2010) and the above-cited prevalence statistics reinforce the severity of the problem. While many countries are building their capacity to respond to student mental health, existing government and university sector's policies and programs targeted at the mental health of students are currently still inadequate in addressing the population needs (Orygen, 2017).

Despite the alarming rates of psychological distress found among this population, students have been found to struggle to disclose their mental health problems, mainly due to stigma surrounding mental health and their fear of being socially isolated as result (Davies et al., 2016; Reavley et al., 2012). Additionally, some students are not aware of

✉ Arianne C. Reis
a.reis@westernsydney.edu.au

1 Western Sydney University, Locked Bag 1797, Penrith, NSW 2751, Australia

the resources available to them; therefore, they have no point of reference to seek help (Orygen, 2017). Other students feel their mental health problems are insignificant as they feel their courses bring about that pressure, leading them to not seek help as there is a misconception that they are meant to endure it. Furthermore, some students do not want mental health issues on their records for fear this will impact their career development (Davies et al., 2016).

It is apparent, therefore, that there is a need for university students to be well informed about mental health so that they are able to independently take action when at risk, build foundational knowledge of how to recognise symptoms and appropriately help seek (Reavley et al., 2012). As such, universities are increasingly investing in prevention strategies focused on supporting students to build mental health literacy (MHL).

MHL is the awareness and ability to accurately recognise mental health conditions, and understand risk factors, non-stigmatising attitudes and self-help techniques to facilitate the ability to seek support for the management and prevention of mental ill-health (Jorm et al., 1997; Kutcher et al., 2016). Research suggests that mental health literacy training (MHLT) programs are capable of increasing mental health knowledge, promoting non-stigmatising attitudes and improving attitudes towards help-seeking behaviour in different communities (Anderson & Pierce, 2012; Moll et al., 2018; O'Connell et al., 2021). However, findings are not consistent across all types of constructs involved in MHL (e.g. mental health knowledge, attitudes, beliefs, norms and stigma, help-seeking behaviour, etc.), and training itself is not standardised, with a great variety of practices, processes and implementation strategies of training being promoted and offered across different countries. Within this context, identifying what type of training is effective to address a particular mental health literacy construct is a challenging task.

Lo et al. (2018) conducted one of the first comprehensive reviews of research assessing the impact of different MHLT programs on the MHL of university students. They found that Mental Health First Aid (MHFA) training interventions improved participants' attitudes to providing help to those with mental health conditions as well as improved participants' MHFA knowledge. However, they found little to no significant effect of MHFA or any other type of training on attitudes to seeking professional help, stigma, depression literacy or beliefs about treatment of mental health conditions, which points to very limited benefits of these programs as preventative strategies to promote, maintain and improve students' own mental health.

The positive albeit limited results associated with MHFA training reported in Lo et al. (2018) study attests to its popularity as a MHL training option offered at universities across the world. This training program was developed in 2000 in Australia and has since been adopted in more than 27 countries (Mental Health First Aid Australia, 2020). The twelve-hour course, designed for the public, covers an array of mental health conditions and mental health crises. When delivered in university settings, MHFA aims to promote basic skills to all students and staff and to encourage students to seek help when needed, reduce stigma around mental health and provide skills to facilitate peer support (Kitchener & Jorm, 2017). A recent review study by El-Den et al. (2020) focused specifically on MHFA training delivered to university students found that knowledge, literacy, confidence, stigma, intentions and skills are the constructs most frequently measured by studies in this field.

However, there are significant limits to the scope of Lo et al. (2018) and El-Den et al. (2020) reviews to appropriately inform researchers and practitioners about the effectiveness of MHLT as a preventative strategy to address the mental health crisis that universities across the world have been reporting (American College Health Association, 2019; Orygen, 2017; Thorley, 2017), particularly as it relates to the types of programs that are effective and the constructs that are adequately addressed by the training. First, Lo et al. (2018) study was limited to randomised control trials (RCTs), limiting the scope of studies included, and five out of the seven studies included focused on the MHFA program, limiting the type of training and MHL constructs assessed. Despite its popularity, MHFA training is only one of many types of MHLT programs available to university students worldwide, and therefore while it might be easier from a researcher point of view to apply and compare results from a standardised training program in empirical assessments of impact, from a practitioner point of view understanding the variability of practices available is certainly more enlightening when developing a tailored or targeted program for their student population.

Second, El-Den et al. (2020) review was not only limited to MHFA programs but it also did not discuss or assess the quality of the evidence to support the effectiveness of MHFA training on students' MHL. This oversight creates a significant gap in the literature in regard to the accumulated evidence of the effectiveness of initiatives and interventions aimed at increasing the MHL of university students beyond MHFA training and beyond studies using RCTs. This is important because one of the main roles of research is to inform practice and, as it stands, practitioners who wish to use MHLT programs as a prevention strategy to address mental health issues among university students are limited in terms of the current available summary of evidence of the effectiveness of these programs as preventative strategies. More significantly, because there are so many aspects (i.e. constructs) of mental health literacy that can be addressed by any one particular training program, and so many different ways of providing this training, without a clear indication of what are the characteristics of training that most effectively

address each of MHL's constructs practitioners will struggle to efficiently build evidence-based training programs to support the particular needs of their university student cohorts.

This review aims, therefore, to address this gap and systematically evaluate intervention studies using MHLT programs for university students (other than MHFA training) to observe their impact on the different MHL constructs. Significantly, this review provides also a synthesis of the available information on common practices, processes and implementation elements of MHLT programs to assist practitioners in their decision-making process when developing strategies to support MHL of university students, It is essential to collate available evidence on MHLT programs' effectiveness to meaningfully propose future program development that ensures better delivery of mental health support services to university students and therefore act as prevention measures to address the high level of mental health distress reported by students.

Methods

Research Questions

1. What types of MHLT are offered to university students and what constructs are measured as part of the assessment of the MHLT provided?
2. What are the common practices, processes and implementation elements of MHLT interventions for university students?
3. What is the current evidence for the effectiveness of interventions?

Eligibility (PICO)

Eligible populations included students enrolled in any course at a university, college or vocational institution, at any stage of their qualification (i.e. undergraduate or postgraduate). This included both domestic and international students of any age group. Interventions in which students were involved together with other population groups were only included if students were a specific target of the study and findings could be separated between population types.

Eligible interventions included those that intended to improve and measure any aspect of MHL, including help-seeking and help-offering behaviour, stigmatising behaviours and attitudes, and mental health awareness and knowledge. Mental health-related content that was delivered as a compulsory part of curriculum where mental health was a core teaching and learning component of the course (e.g. psychology, nursing) were not included. Studies that used solely the MHFA training program were not included, given these have been recently reviewed by El-Den et al. (2020).

However, studies that combined MHFA with another program were eligible if findings could be separated between program designs. Also excluded were studies that measured MHL but did not include an intervention that was designed to improve a component of MHL. All modes of delivery (e.g. online, face-to-face) were included.

Non-peer-reviewed material as well as systematic or scoping reviews were excluded, but were reviewed for potential sources. All study designs were included.

Studies could include any comparison condition, including no intervention, waitlist, academic/educational interventions, or community-based interventions. Studies where no comparison intervention or group was available were also included.

Eligible outcome was MHL measured through any of its components, including help-seeking and help-offering behaviour, stigmatising behaviour and attitudes, and specific or general mental health knowledge (Jorm et al., 1997; Kutcher et al., 2016). Studies that used validated or non-validated tools were included. Short- (< 2 months), medium- (2–12 months) and long-term (> 12 months) outcome assessments were included.

Literature Search and Selection

A systematic search was conducted according to PRISMA guidelines (Moher et al., 2009). A review protocol was created using the System for Unified Management, Assessment and Review of Information (SUMARI) online software. Key search terms were established and used as Boolean search terms in the comprehensive search of articles from four electronic databases: EBSCOhost, Ovid, ProQuest and Web of Science. The selection of these databases was due to their size and reach, covering the vast majority of peer-reviewed publications in the fields of health and medical sciences and of education.

No limits on publication year or type of publication were included in the search. Limits on language were also not included; however, given the search was exclusively conducted using English search terms, only articles with at least title and abstract in English were included. This constraint notwithstanding, the research team included members fluent in three languages other than English who could assess potential articles retrieved that had full text in one of them. The search was conducted in June 2020. A sample search strategy can be found in Online Resource 2.

All retrieved articles were screened, and duplicates were removed. Titles and abstracts were then reviewed for eligibility by two independent reviewers (AR, RS), with a kappa reliability coefficient of 0.895 obtained between them. Non-peer-reviewed material and review studies retrieved in this initial process were screened for any potential missing studies. Back references of all papers included in the review were also searched to identify additional articles.

Any conflicts arising from the selection of studies for full-text review between the two reviewers were resolved by discussion. This process led to the re-screening of articles but no changes to the original selections were required. When information was not sufficient to make a consensual decision based solely on title and abstracts, studies were included for full-paper review. Studies that were excluded following this process also went through a double-blind review process, with a kappa reliability coefficient of 0.956 achieved between the two independent reviewers.

Assessment of Quality of Evidence

The quality assessment of included articles was conducted using the Joanna Briggs Institute's (JBI) critical appraisal tools for the respective study designs (Joanne Briggs Institute, 2017) in SUMARI. Two researchers (AR, SS) independently reviewed the selected studies and discussed any differences in ratings until a consensus was reached. A kappa coefficient was calculated for each item between the two assessors, and ranged from 0.763 to 0.925, with an average of 0.874 overall.

For each domain included in the critical appraisal tool, reviewers indicated whether the study appropriately addressed the domain (Y), did not address it (N) or the information was unclear (UN). A score was then given to each study based on the number of Ys received. A 40% score was deemed the minimum threshold to indicate sufficient quality standards to merit consideration of findings in regard to the intervention's effectiveness. In addition, studies were expected to receive either a Y or UN for selected domains, depending on the type of study. For quantitative studies, in general, the domains included: valid methods used for identification of the condition for all participants; the outcomes or follow up results of cases clearly reported; appropriate statistical analysis conducted; outcomes measured in a reliable way; and participants at baseline/control groups being comparable. For qualitative studies, the domains included: research methodology and research question congruity, research methodology and data analysis congruity, and conclusions drawn clearly flowing from the analysis of the data. More details are included in the Online Resource 3.

Textual analysis of studies was conducted using NVivo 12 Pro software©, where information from each study included was coded: author(s); publication year, country where study was conducted, study population and size, study design, intervention type, type of delivery (e.g. length, face to face/online/blended), measures (main effects measured), results (outcomes), and limitations. A matrix table was then created as a result of this process to facilitate analysis. Nodes were also created in NVivo to highlight key sections of the text as points of further interest and discussion.

The review was conducted following PRISMA (Moher et al., 2009) and A Measurement Tool to Assess Systematic Reviews (AMSTAR2) guidelines (Shea et al., 2017).

Results

A total of 1219 articles were retrieved from the four databases. After the removal of 466 duplicates, title and abstract of 762 articles were reviewed for eligibility, including nine articles identified through hand-searching. Forty-four peer-reviewed studies were selected for full-text review. Twenty articles were excluded after full-text review for not meeting the eligibility criteria (Fig. 1). Twenty-four articles were included for full review and their analysis is presented in the following sections: (1) "Study Characteristics"; (2) "Types of MHLT Offered", answering research question 1; and (3) "Common Practices, Processes and Implementation Elements", answering research question 2. Research question 3 is addressed in the section "Effectiveness of Interventions". However, given we can only establish what the current evidence for the effectiveness of interventions is based on studies that achieve minimum standards of rigour and validity, studies that did not meet the minimum quality standards defined earlier based on JBI's critical appraisal tools were not included in this section. As detailed in the Online Resource 3, only five studies met the required criteria and are therefore included in this last subsection of the presentation of results.

Study Characteristics

Online Resource 4 shows a full summary of the final articles included in this review. Table 1 provides an abbreviated summary, including key characteristics of the studies. Sample sizes ranged from 20 to 1452 participants, with total data from 5259 participants (260.8 ± 394.90). The reported mean age of participants ranged from 18.57 to 28.2 years, although the vast majority of studies ($n = 16$) reported mean values in the low 20 s range. Five studies did not mention demographic data on age. Of the 22 studies where data on sex or gender were present, females were not the majority in two. In both cases, the focus population was resident assistants, that is, students who live and work in residence halls supporting fellow student residents. The prevalence of female participants on most studies was considerable, with five studies presenting over 80% female students. Despite this prevalence of female participants, no intervention was gender-specific.

Ten studies were conducted with students enrolled in health disciplines, particularly Medicine, Psychology and Pharmacy, and two focused on non-health disciplines, namely Arts and Education. Only seven studies involved a mixed cohort of students from various courses, two of them focusing specifically on resident assistants. An

Fig. 1 PRISMA flowchart
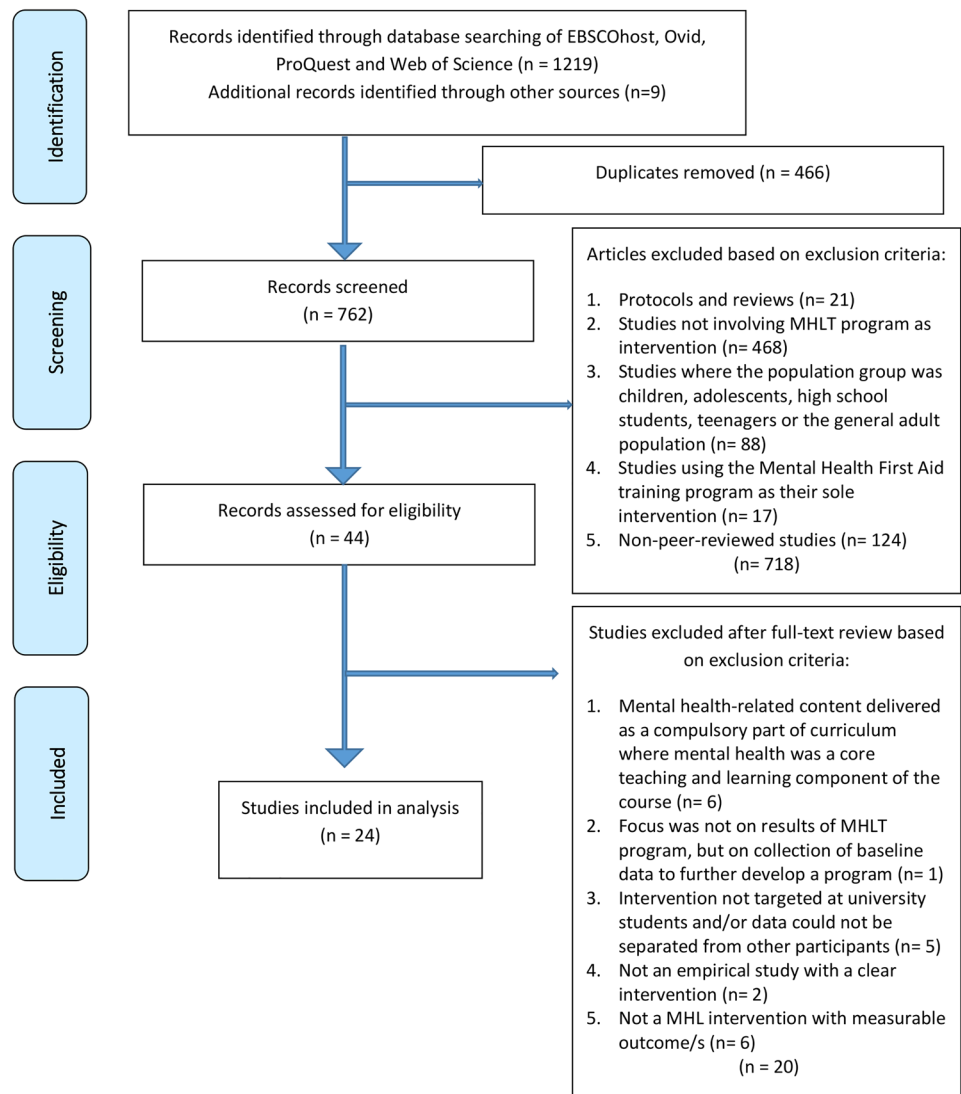
extra five studies did not specify the course in which students were enrolled. The majority of studies focused on undergraduate students ($n = 14$) with no study specifically focusing on a postgraduate cohort. Only one study focused specifically on international students, with the vast majority ($n = 22$) not being clear whether international students were included in their sample at all.

In order to assess effect of the intervention beyond immediately after its conclusion, 15 studies included at least one follow-up assessment, ranging from 1 week to 20 months after baseline collection. Of those, two had multiple follow-up surveys, and were also the only two studies that had follow-ups beyond a 6-month period.

Types of MHLT offered (Research Question 1)

The focus of MHLT varied. Eleven studies were general in nature, including a combination of general mental health

knowledge, attitudes towards mental health, self-efficacy and social connectedness concepts, and subjective norms. The most common topic-specific program was suicide awareness ($n = 4$), eating disorders ($n = 2$) and anti-stigma programs ($n = 2$). Other topic-specific programs included alcohol and other drugs, depression, psychosis, stress management and a program focused specifically on increasing intentions to use mental health services.

Outcome measures were grouped in five main categories: (1) knowledge ($n = 16$), including mental illness-specific knowledge, illness attributions, familiarity with mental illnesses and recognition of symptoms; (2) attitudes, beliefs, norms and stigma ($n = 14$), which includes attitudes towards seeking professional help and towards offering help as well as self-stigma and public stigma; (3) help-seeking ($n = 12$), including barriers to seek help, help-seeking intentions, behaviour and efficacy; (4) general mental health first aid ($n = 7$), which includes confidence in providing assistance,

Table 1 Summary of Included Interventions

Year	Author	Study design	Main focus	Country of delivery	Target population	Sample size	Delivery	MHLT duration	MHL constructs
2015	Bentley et al.	Case series	Eating disorders	Australia	Undergraduate Psychology students	176	Face-to-face	3-h workshop	Knowledge
2014	Casas et al.	RCT	Psychosis literacy	Mexico	Undergraduate Medicine students	126	Video presentation	Short video or film presentation (<35 min)	Knowledge; Attitudes, beliefs, norms and stigma; Help-seeking
2019	Clough et al.	RCT	General MHL	Australia	International students	45	Online	Online module/s (no length specified)	Knowledge; Help-seeking
2015	De Silva et al.	Case series	Suicide awareness	Australia	Medicine, pharmacy and paramedicine undergraduate students	266	Face-to-face	5-day training	Knowledge; First-aid; Behaviour
2019	Ebert et al.	RCT	Help-seeking	Germany	Undergraduate students	1375	Printed resource	Printed information/handbook	Help-seeking
2016	Ekore et al.	Case series	General MHL	Nigeria	Undergraduate students	20	Face-to-face with peer counsellors	2-day training	Knowledge
2013	Friedrich et al.	Quasi-experimental design	Anti-stigma	UK	Undergraduate Medicine students	1452	Face-to-face	Short training session (no length specified)	Knowledge; Attitudes, beliefs, norms and stigma; Behaviour
2017	Funkhouser et al.	Quasi-experimental Design	General MHL	USA	Undergraduate Psychology students	52	Peer-delivered	Short training session (no length specified)	Knowledge; Attitudes, beliefs, norms and stigma; First-aid; Behaviour; Mental health illness symptoms
2018	Gilham et al.	Case series	General MHL	Canada	Mixed cohort	51	Face-to-face peer-delivered	Half-day training	Knowledge; Attitudes, beliefs, norms and stigma; Help-seeking
2014	Gratwick-Sarll and Bentley	Case series	Eating disorders	Australia	Undergraduate Psychology students	177	Face-to-face	3-h workshop	Knowledge; Attitudes, beliefs, norms and stigma; First-aid

Table 1 (continued)

Year	Author	Study design	Main focus	Country of delivery	Target population	Sample size	Delivery	MHLT duration	MHL constructs
2018	Han et al.	RCT	Suicide awareness	China and Australia	Mixed cohort	257	Online	2×5-min modules	Knowledge; Attitudes, beliefs, norms and stigma; Help-seeking; First-aid; Self-efficacy, self-esteem and self-reliance
2017	Hankir et al.	Case series	Anti-stigma	UK	Arts students	21	Film screening	Short video or film presentation (<35 min)	Knowledge; Attitudes, beliefs, norms and stigma; Behaviour
2019	Hunt et al.	Case series	General MHL	UK	Undergraduate Psychology students	71	Printed resource	Printed information/handbook	Knowledge; Attitudes, beliefs, norms and stigma
2013	Lintvedt et al.	RCT	Depression	Norway	Mixed cohort of students who presented a score of 20 or above on the Kessler Psychological Distress Scale	163	Online	Online module/s (no length specified)	Knowledge; Help-seeking; Mental health illness symptoms
2018	McLean and Swanbrow Becker	RCT	Suicide awareness	USA	Resident assistants	162	Face-to-face	1-h training	Knowledge; Help-seeking; First-aid
2019	Nozawa et al.	RCT	General MHL	Japan	Undergraduate students	23	Face-to-face with peer counsellors	4×30-min sessions	Knowledge; Mental health illness symptoms; Self-efficacy, self-esteem and self-reliance
2012	O'Reilly et al.	Qualitative	General MHL	Australia	Undergraduate Pharmacy students	67	Face-to-face consumer-led	Short training session (no length specified)	Attitudes, beliefs, norms and stigma
2017	Patalay et al.	Case series	General MHL	UK	Undergraduate Medicine students	40	Face-to-face	9 to 15 various training sessions	Knowledge; Attitudes, beliefs, norms and stigma; Help-seeking

Table 1 (continued)

Year	Author	Study design	Main focus	Country of delivery	Target population	Sample size	Delivery	MHLT duration	MHL constructs
2003	Pearce et al.	Case series	Suicide awareness	Australia	Mixed cohort	42	Face-to-face	2-day workshop plus presentations and handouts	Knowledge Attitudes, beliefs, norms and stigma Behaviour Self-efficacy, self-esteem and self-reliance Social connectedness and social support
2014	Reavley et al.	RCT	General MHL	Australia	Mixed cohort	767	Campaigns	2-year campaign	Knowledge Attitudes, beliefs, norms and stigma Help-seeking First-aid Mental health illness symptoms
2018	Saleh et al.	RCT	Stress management	France	Mixed cohort	128	Online	4 × 20-min sessions	Knowledge Self-efficacy, self-esteem and self-reliance Mental health illness symptoms
2006	Sharp et al.	RCT	General MHL	USA	College undergraduate students	123	Face-to-face	40-min classroom session	Attitudes, beliefs, norms and stigma Help-seeking
2015	Thombs et al.	RCT	Alcohol and other drugs	USA	Resident assistants	566	Online	3 × 15–25-min online sessions	First-aid
2020	Wei et al.	Quasi-experimental design	General MHL	Canada	Preservice teachers	176	Blended	2-day session plus online modules	Knowledge Attitudes, beliefs, norms and stigma Help-seeking

intention to offer help, and general mental health first aid experience; and (5) identification of mental health illness symptoms ($n = 5$).

Common Practices, Processes and Implementation Elements (Research Question 2)

Delivery of MHLT occurred mostly face-to-face, commonly through interactive workshops, testimonials, seminars, role-plays, video presentations and film screenings. Five interventions were delivered online, and in one occasion the study used both online and face-to-face delivery of the same intervention. One study was a general MHL campaign using different media sources, and two studies were based on the delivery of printed resources to students.

Peers were occasionally involved in the facilitation of training sessions. Two studies were specifically peer-delivered and two had a focus on peer counselling with trained peer counsellors leading the sessions. One study was delivered by individuals with lived experience of mental health.

Interventions were mostly one-off training or informational sessions of self-reported short duration, but there was considerable variety in length and approach. Two studies were based on the delivery of a short informational video or short film, and seven others were based on a seminar-style or interactive workshop training session, ranging from 40 min to 3 h, three studies not specifying the length of the one-off short training session.

Online training was also typically delivered as short modules. The psychoeducational program *ProHelp* delivered in Han et al. (2018) study consisted of two 5-min modules, while the stress management program *I'm managing my stress* was delivered in four 20-min sessions using cognitive behavioural therapy strategies that included psycho-education, practical exercises and activities participants were asked to complete (Saleh et al., 2018). The online training program *Peer Hero* used interactive video dramatizations of residence life incidents, as well as a counselling session segment and a series of parent and student interviews (Thombs et al., 2015). Each session could be completed in 15–25 min.

Apart from these short training sessions and modules, one study analysed the effectiveness of a 2-year whole-of-campus, multi-faceted mental health promotion campaign.

There were four multi-day intensive workshops that ranged in length from 2 to 5 days, with some of them also including other resources such as extra online modules to be completed by participants or extra seminar presentations and printed material delivered in addition to the intensive training days. The study by Nozawa et al. (2019) was also multi-day but the peer counselling sessions were delivered twice weekly for 2 weeks for about 30 min. Gilham et al. (2018) study involved a waterfall delivery model in which students were progressively trained in three tiers: a small group of

student master trainers (MTs) received printed resources (i.e., the *Transitions* resource) to select topics of relevance for the train-the-trainer program. The MTs were then taught in a day-long training session and selected MTs delivered a 1.5-h seminar-style training program to student trainers. The student trainers then delivered a 40-min presentation to a larger group of students. Despite the trickle down model, the MHLT sessions per se were still mostly of short duration.

A more complex and slightly lengthier model of delivery was found in one study. Patalay et al. (2017) *OpenMinds* program comprised of three sequential components: a "Crash Course" involving six to eight sessions providing students with information on a range of mental health topics; one to three classroom training sessions to equip students to plan and deliver a workshop; and then at least two workshops delivered by the students to secondary schools where they applied their knowledge and skills.

Effectiveness of Interventions (Research Question 3)

The effectiveness of interventions is reviewed below based on the most common outcome measures assessed in the included studies: (1) mental health knowledge; (2) attitudes, beliefs, norms and stigma; (3) help-seeking; and (4) mental health first aid. As indicated earlier, only studies that met the minimum quality standards defined based on JBI's critical appraisal tools ($n = 5$) are reviewed below (see Online Resource 3 for more information).

Knowledge

Four out of the five studies that met the minimum quality standards included some measure of knowledge pre and/or post intervention. The types of knowledge assessed included general mental health knowledge, disorder and symptoms identification, and suicide literacy.

The study by Funkhouser et al. (2017) examined the short-term effect of the peer-delivered *Depression OutReach Alliance* (DORA) program on participants' knowledge of suicide using eight true/false items as well as depression knowledge using the Adolescent Depression Knowledge Questionnaire. The program was of short duration and used a quasi-experimental design with questionnaires completed before and immediately after training and at 1-week follow-up. Knowledge results merged depression and suicide knowledge into one category and analysis of time x group interaction found no statistically significant differences post intervention.

Psychosis literacy, including knowledge of psychotic symptoms and illness attribution, was assessed by Casas et al. (2014). The study involved the delivery of a short video presentation to medical students and community members. Results suggest an increase in psychosis literacy

post-intervention for both groups compared to the control group, with participants identifying significantly more symptoms of psychosis in their definitions of serious mental illness as well as significant increases in illness attributions after the intervention.

Clough et al. (2020) used the Mental Health Literacy Scale to measure changes in mental health knowledge post-training. The study implemented an online MHL module focusing on international students and found no significant differences in MHL scores between groups post-training. Conversely, the *OpenMinds* train-the-trainer program was successful in achieving significant improvements in general mental health knowledge (0.45 ± 0.20 vs. 0.61 ± 0.16) and disorder identification (77.5% vs. 100%) among participants post-intervention (Patalay et al., 2017). The program involved comprehensive training, including a "crash course", classroom training and workshops that were delivered by trained university students to high school peers. The study focused on medical students and involved a minimum of six sessions, plus classroom training and the delivery of the course.

Attitudes, Beliefs, Norms and Stigma

Three of the five selected studies specifically measured attitudes, beliefs, norms and stigma of students regarding mental health. Results from all three studies report positive impacts from MHLT on these constructs, although the strength of the evidence remains weak. Clough et al. (2020) study with international students completing an online MHL education module found a statistically significant increase in self-reported attitudes to seeking professional psychological help from pre- to post-intervention for the experimental group (59.8 ± 13.88 vs. 63.1 ± 15.46) but not for the control group (64.8 ± 15.17 vs. 63.1 ± 12.67). In addition, although statistically significant, the increase was of small magnitude ($\approx 5\%$), which suggests limited gains in practice.

The *Depression OutReach Alliance* program reported positive results in measures of attitudes and self-stigma (Funkhouser et al., 2017). The study, focusing on undergraduate psychology students, found that immediately post intervention and at 1-week follow-up participants reported a decreased desire to socially distance from a distressed peer as well as a reduction in perceived social stigma related to receiving help. However, the effect was of 1.5 point in a scale from 6 to 24, which suggest very limited gains. Moreover, results did not show a decrease in self-stigma related to receiving help, showing that the already marginal results were limited to perceptions of others rather than oneself.

Medical students engaged in the *OpenMinds* program presented statistically significant changes in social distance and non-stigmatising attitudes. However, the gains for medical students were of 0.21 for non-stigmatising attitudes and of

0.58 for social distance, while for school students they were of 0.08 and -0.03, respectively.

Help-Seeking

Help-seeking was assessed in four of the five selected studies in relation to help-seeking intentions and efficacy, and there was little to no evidence of improvement in these constructs post-intervention in all four studies.

The study by Clough et al. (2020) used the General Help-Seeking Questionnaire to assess help-seeking intentions after students' completion of an online MHL education module and reported no significant impact among international students who completed the training. Similarly, Patalay et al. (2017) study on the *OpenMinds* program found no statistically significant change in help seeking intentions post training among medical students (0.88 ± 0.17 vs. 0.94 ± 0.14, $p = 0.107$), while non-medical students were reported to present a significant, although very small, increase (0.76 ± 0.25 vs. 0.81 ± 0.25, $p = 0.004$). Casas et al. (2014), who also targeted undergraduate medical students, found no significant changes in students' recommendations for professional or social help after watching the short video presentation focusing on psychosis literacy.

Ebert et al. (2019) study on the effects of an acceptance-facilitating intervention on German students' intention to use mental health services was the only study among the selected five that found a positive effect of training on help-seeking intentions. Participants in the intervention presented significantly higher intentions to seek help in the next semester compared to the control group; however, the magnitude of the effect size was small (2.25 ± 0.973 vs. 2.13 ± 0.993, $p = 0.024$), again limiting the strength of the evidence in support of MHLT improving help-seeking.

Mental Health First Aid

Mental health first aid skills was measured in only one of the selected studies, using an adapted version of the Suicide Intervention Response Inventory 2, where 3 items were removed for being irrelevant or unclear (Funkhouser et al., 2017). The study found a score 16.8% lower among participants in the Depression OutReach Alliance program than those in the control group (72.4 ± 19.53 vs. 86.9 ± 21.69, $p = 0.014$), which represents better response skills.

Discussion

The objective of this systematic review was to provide a narrative synthesis of the impact of non-curricular MHLT other than the MHFA program on university students' MHL, and

provide an up-to-date assessment of available evidence. This study reviewed the types of MHLT offered to university students, the constructs measured as part of the assessment of the training provided, as well as the common practices, processes and implementation elements of MHLT interventions. More significantly, the current review assessed the quality of the evidence on the effectiveness of MHLT interventions.

Despite a number of recent studies reviewing MHLT programs delivered to the general population (Hadlaczky et al., 2014; Morgan et al., 2018) and to university students more specifically (El-Den et al., 2020; Lo et al., 2018), the need for the current study is justified by the lack of reviews that include all types of study designs, that focus on MHLT other than the now popular MHFA, that target university students, and that assess the quality of the evidence of findings irrespective of study design. Although some of the current findings do overlap with previous reviews, a number of important new contributions to knowledge are identified here, to a large extent precisely due to this shift in focus and expansion of scope.

Effectiveness of Interventions

First and foremost, the quality of studies assessing the effect of MHLT on university students is surprisingly low. Therefore, policies, practices and interventions developed using the (frequently positive) results presented in this now substantial body of research risk being flawed from their inception. Previous studies that systematically reviewed MHLT programs delivered to university students and that could have provided guidance in such instances have either not assessed the quality of the evidence (El-Den et al., 2020) or analysed and reported on the mostly positive results presented in a (small sample) of selected (RCT-only) studies largely ignoring the low quality achieved by the majority of the studies in their own risk of bias assessment (Lo et al., 2018). In this latter example, the authors state as a limitation of their review that "studies generally had low quality assessment scores indicating numerous potential sources of bias, which may compromise internal validity" and that they "are therefore unable to draw robust conclusions from these articles" (Lo et al., 2018, p. 173). However, despite the low quality and therefore weak evidence base, they conclude their article suggesting that these programs "may be valuable to health professional curricula both for students and their clinical educators" (Lo et al., 2018, p. 174).

In the present review, only five articles achieved the minimum quality standards for assessment of their evidence for the effectiveness of the interventions. Even in these instances, the overall effectiveness of mental health literacy interventions on increasing mental health knowledge was found to be weak. Although two studies did find evidence of improvement in some aspect of mental health knowledge after the intervention, only short-term impacts were measured (Casas et al., 2014; Patalay et al., 2017). In addition, the other two studies found no evidence of improvements even immediately after training (Clough et al., 2020; Funkhouser et al., 2017). This finding contrasts with Morgan et al. (2018) systematic review results, where mental health knowledge presented the strongest evidence of improvement among all mental health outcomes measured. Their review focused on MHFA training, a specific training program that was not included in this review.

For those studies included in this review that did present evidence of impact ($n = 2$), no consistent pattern was apparent, apart from both of them focusing on undergraduate medical students. Both studies were delivered face-to-face, but one was solely based on a short video presentation focusing on psychosis and depression literacy (Casas et al., 2014) whereas the other included a more comprehensive program of general mental health literacy training over several weeks (Patalay et al., 2017).

The mental health literacy construct that presented the most promising results was attitudes, beliefs, norms and stigma, with all three studies that measured this construct presenting positive results. Similarly, first-aid skills were found to improve among participants in the only study included that assessed this outcome. However, for both outcomes, results were modest and short-term, with no evidence to suggest that improvements in attitudes, reduction in stigmatising views or crisis response skills last for more than a few weeks post-training. These findings align with Morgan et al. (2018) systematic review of MHFA training, where only low to moderate effects were found to persist up to 6 months post-completion of training.

Help-seeking is arguably the most important outcome of mental health literacy training, given its role in leading individuals to appropriate support sources and resources. Despite playing a crucial part in addressing mental health issues, help-seeking intentions and efficacy do not seem to be considerably impacted by MHLT. Four studies assessed in this review measured this outcome and found little to no evidence of changes in help-seeking intentions and efficacy post-training.

"At-Risk" Sub-populations

Despite evidence suggesting that postgraduate students are more than six times as likely to experience depression and anxiety than the average population (Evans et al., 2018), and that their needs and challenges are specific and distinct from the broader undergraduate cohort of students (Wyatt & Oswalt, 2013), no study was identified that was specifically targeted postgraduate students.

Similarly, international students have been repeatedly identified as an 'at-risk' group for psychological distress among university students (Mesidor & Sly, 2016; Sawir et al., 2008; Sullivan & Kashubeck-West, 2015), not only due to the challenges faced by this cohort in relation to language and cultural barriers faced in addition to the regular stresses associated with university education (Orygen, 2017), but also because of lack of awareness and consequent underutilisation of services, at lower levels than their domestic counterparts (Hunt & Eisenberg, 2010; Khawaja & Stallman, 2011). Despite this, only one study was identified in this review focusing on supporting international students' MHL needs (Clough et al., 2020).

It is not uncommon for systematic reviews conducted predominantly in the English language to find a lack of diversity of countries represented in the included studies. El-Den et al. (2020), Hadlaczky et al. (2014) and Lo et al. (2018) systematic reviews, for instance, included studies from only three countries each: Australia, USA and UK; Australia, Canada and Sweden; and Australia, USA and Sweden, respectively. Although the present review showed a wider variety of countries represented in the studies included, there was still predominance of high-income countries, an issue that has been referred to as geographical bias in knowledge diffusion (Skopec et al., 2020). It is beyond the scope of this paper to discuss the matter of bias in the peer-review publication process, but it is important to note that the lack of representation from low- to middle-income countries in MHLT studies presents a significant gap in knowledge when it comes to the applicability of models and practices internationally. This issue overlaps with the lack of research focusing on international students, and more studies in this space would greatly benefit our understanding of the cultural aspects associated with MHL. Additionally, as Beks et al. (2018, p. 68) argue, attention should also be paid to the instruments used to measure MHL, as they currently "focus exclusively on Western views and perspectives of mental health [and] may not capture culturally diverse perspectives on mental health and wellbeing."

Variability in Approaches and Measures

Variability in approaches and measures used was a common theme of the results of this review. Two key common characteristics of interventions have been identified: (1) training programs are generally based on short, one-off sessions, and (2) outcomes are measured in the short-term. Moreover, few studies discuss the sustainability of the intervention per se in the long-term, even when it is based on one-off training sessions. Whether education institutions will continue to provide the training to future cohorts, what the funding arrangements and needs are, among other questions, are all of extreme importance if we are to truly address the urgent mental health needs of university students from a preventative framework, which is purportedly the main aim of providing MHLT to this population. Unfortunately, findings from this systematic review suggest that despite broad reporting of positive impacts of MHLT programs on MHL outcomes post training, evidence of impacts, even in the short-term, remains, at best, inconclusive.

Strengths and Limitations

A strength of this systematic review is the inclusion of both qualitative and quantitative evidence synthesis, following AMSTAR2 and PRISMA guidelines, broadening the scope of previous reviews. However, given the variety of study designs included, and lack of consistent measures used in the studies included, a meta-analysis of findings was not possible.

Another strength of this review is that no restriction was placed on publication language and dates in the search process. However, despite best attempts to incorporate publications from languages other than English, three potential articles were excluded given reviewers were not sufficiently fluent in any of these particular languages (Turkish, French and Japanese) to proceed with full review. In the end, only articles in English were included.

Other limitations relate to the studies identified, which were generally reporting on short interventions, with relatively small cohorts and lacking medium to long-term follow-up. More significantly, the quality of the methodological processes followed by the articles that met the inclusion criteria for this review was, on average, moderate to low, therefore impacting on the validity of the findings, even when they presented statistically significant improvements in MHL post-training. This means that significant caution needs to be taken when using the selected studies as evidence to support MHLT programs as prevention strategies to address currently poor mental health outcomes of university students.

Lastly, the range of study designs used and outcome measures assessed made it challenging to compare findings and therefore determine the effectiveness of particular types of MHLT training, their characteristics and approaches. Very few validated measures were used in more than one study (11 out of approx. 85 different measures), with most studies using non-validated tools to assess measures of change; as a consequence, results are not easily comparable.

Conclusion

MHLT programs seek to act as preventative measures to address the mental health of university students and act to mitigate the effects of identified risk factors by improving

students' MHL. However, evidence is so far limited as to the extent of the effectiveness of these programs (excluding MHFA, which was not reviewed in the present study) in achieving meaningful and sustainable improvements in MHL that lead to real positive changes in help-seeking behaviour and, ultimately, better mental health outcomes for students. Given the significantly high level of mental health concerns among university students worldwide, and the number of MHLT programs frequently offered by universities as a preventative strategy to reduce mental health conditions among their students, it is urgent that more robust data is collected to establish the effectiveness of these programs in achieving their health promotion aims. This is important not only to potentially enhance programs that are currently on offer but also to better inform new initiatives that aim to improve the mental health of university students.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s11121-021-01283-y.

Declarations

Ethics Approval This is a systematic review of the literature. No ethics approval is required.

Consent to Participate This study is a systematic review of the literature. Consent to participate is not applicable.

Conflict of Interest The authors declare no competing interests.

References

Akhtar, P., Ma, L., Waqas, A., Naveed, S., Li, Y., Rahman, A., & Wang, Y. (2020). Prevalence of depression among university students in low and middle income countries (LMICs): A systematic review and meta-analysis. *Journal of Affective Disorders, 274*, 911–919.

American College Health Association. (2019). *American College Health Association National College Health Assessment II: Reference Group Executive Summary Spring 2019*. American College Health Association.

Anderson, R. J., & Pierce, D. (2012). Assumptions associated with mental health literacy training – Insights from initiatives in rural Australia. *Advances in Mental Health, 10*, 258–267.

Ashoorian, D., Albrecht, K. L., Baxter, C., Giftakis, E., Clifford, R., Greenwell-Barnden, J., & Wylde, T. (2019). Evaluation of mental health first aid skills in an Australian university population. *Early Intervention in Psychiatry, 13,* 1121–1128.

Beks, T. A., Cairns, S. L., Smygwaty, S., Miranda Osorio, O. A., & Hill, S. J. (2018). Counsellor-in-residence: Evaluation of a residence-based initiative to promote student mental health. *Canadian Journal of Higher Education/revue Canadienne D'enseignement Supérieur, 48*, 55–73.

Bentley, C., Gratwick-Sarll, K., & Mond, J. (2015). Perceived psychosocial impairment associated with eating disorder features: Responses to a mental health literacy intervention. *Journal of Eating Disorders, 3*, 1-7. https://doi.org/10.1186/s40337-015-0084-9

Burns, S., Crawford, G., Hallett, J., Hunt, K., Chih, H. J., & Tilley, P. J. M. (2017). What's wrong with John? a randomised controlled trial of Mental Health First Aid (MHFA) training with nursing students. *BMC Psychiatry, 17*, 111.

Casas, R. N., Gonzales, E., Aldana-Aragon, E., del Carmen Lara-Munoz, M., Kopelowicz, A., Andrews, L., & Lopez, S. R. (2014). Toward the early recognition of psychosis among Spanish-speaking adults on both sides of the U.S.-Mexico border. *Psychological Services, 11*, 460–469.

Clough, B. A., Nazareth, S. M., & Casey, L. M. (2020). Making the grade: A pilot investigation of an e-intervention to increase mental health literacy and help-Seeking intentions among international university students. *British Journal of Guidance & Counselling, 48*, 347–359.

Clough, B. A., Nazareth, S. M., & Casey, L. M. (2019). Making the grade: A pilot investigation of an e-intervention to increase mental health literacy and help-Seeking intentions among international university students. *British Journal of Guidance & Counselling, 48*(3), 347-359. https://doi.org/10.1080/03069885.2019.1673312

Cvetkovski, S., Jorm, A. F., & Mackinnon, A. J. (2019). An analysis of the mental health trajectories of university students compared to their community peers using a national longitudinal survey. *Studies in Higher Education, 44*, 185–200.

Davies, E. B., Wardlaw, J., Morriss, R., & Glazebrook, C. (2016). An experimental study exploring the impact of vignette gender on the quality of university students' mental health first aid for peers with symptoms of depression. *BMC Public Health, 16*, 187.

De Silva, E., Bowerman, L., & Zimitat, C. (2015). A suicide awareness and intervention program for health professional students. *Education for Health, 28*(3), 201-204. https://doi.org/10.4103/1357-6283.178597

Ebert, D. D., Franke, M., Kahlke, F., Kuchler, A. M., Bruffaerts, R., Mortier, P., Karyotaki, E., Alonso, J., Cuijpers, P., Berking, M., Auerbach, R. P., Kessler, R. C., Baumeister, H., & On behalf of the, W. H. O. W. M. H. I. C. S. C. (2019). Increasing intentions to use mental health services among university students. Results of a pilot randomized controlled trial within the World Health Organization's World Mental Health International College Student Initiative. *International Journal of Methods in Psychiatric Research June, 28*, 2.

Ekore, R. I., Ajuwon, A. J., Abdulmalik, J. O., Omigbodun, O. O., & Bella-Awusah, T. T. (2016). Developing mental health peer counselling services for undergraduate students of a nigerian university: A pilot study. *IFE PsychologIA, 24*(2), 246-258.

El-Den, S., Moles, R., Choong, H. J., & O'Reilly, C. (2020). Mental Health First Aid training and assessment among university students: A systematic review. *Journal of the American Pharmacists Association: Japha, 01*, 01.

Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology, 36*, 282.

Friedrich, B., Evans-Lacko, S., London, J., Rhydderch, D., Henderson, C., & Thornicroft, G. (2013). Anti-stigma training for medical students: The Education Not Discrimination project. *British Journal of Psychiatry*, *202*(Suppl 55), s89-s94.

Funkhouser, C. J., Zakriski, A. L., & Spoltore, J. D. (2017). Evaluating peer-peer depression outreach: College students helping peers approach and respond to students in crisis. *Psi Chi Journal of Psychological Research, 22*, 19–28.

Gilham, C., Austen, E. L., Wei, Y., & Kutcherb, S. (2018). Improving mental health literacy in post-secondary students: Field testing the feasibility and potential outcomes of a peer-led approach. *Canadian Journal of Community Mental Health, 37*, 1.

Gratwick-Sarll, K., & Bentley, C. (2014). Improving eating disorders mental health literacy: A preliminary evaluation of the "Should I

Say Something?" workshop. *Eating Disorders, 22*(5), 405-419. https://doi.org/10.1080/10640266.2014.925764

Hadlaczky, G., Hökby, S., Mkrtchian, A., Carli, V., & Wasserman, D. (2014). Mental Health First Aid is an effective public health intervention for improving knowledge, attitudes, and behaviour: A meta-analysis. *International Review of Psychiatry, 26*(4), 467–475.

Han, J., Batterham, P. J., Calear, A. L., Wu, Y., Xue, J., & van Spijker, B. A. J. (2018). Development and pilot evaluation of an online psychoeducational program for suicide prevention among university students: A randomised controlled trial. *Internet Interventions-the Application of Information Technology in Mental and Behavioural Health, 12*, 111–120.

Hankir, A., Zaman, R., Geers, B., Rosie, G., Breslin, G., Barr, L., et al. (2017). The Wounded Healer film: A London college of Communication event to challenge mental health stigma through the power of motion picture. *Psychiatria Danubina, 29*(Suppl 3), 307-312.

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking behavior among college students. *Journal of Adolescent Health, 46*, 3–10.

Hunt, S., Wei, Y., & Kutcher, S. (2019). Addressing Mental Health Literacy in a UK university campus population: Positive replication of a Canadian intervention. *Health Education Journal, 78*(5), 537-544.

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research, 47*(3), 391–400.

Joanne Briggs Institute. (2017). *Critical appraisal tools*. Retrieved July 2020 from https://joannabriggs.org/critical-appraisal-tools

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Pollitt, P. (1997). "Mental health literacy": A survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Medical Journal of Australia, 166*, 182–186.

Kelly, J., & Birks, M. (2017). 'It's the simple things you do first that start the process of help': Undergraduate nursing and midwifery students' experiences of the Mental Health First Aid course. *Collegian, 24*, 275–280.

Khawaja, N. G., & Stallman, H. M. (2011). Understanding the coping strategies of international students: A qualitative approach. *Australian Journal of Guidance and Counselling, 21*, 203–224.

Kitchener, B. A., & Jorm, A. F. (2017). The role of Mental Health First Aid training in nursing education: A response to Happell, Wilson & McNamara (2015). *Collegian, 24*, 313–315.

Kutcher, S., Wei, Y., & Coniglio, C. (2016). Mental health literacy: Past, present, and future. *The Canadian Journal of Psychiatry, 61*, 154–158.

Leahy, C. M., Peterson, R. F., Wilson, I. G., Newbury, J. W., Tonkin, A. L., & Turnbull, D. (2010). Distress levels and self-reported treatment rates for medicine, law, psychology and mechanical engineering tertiary students: Cross-sectional study. *Australian & New Zealand Journal of Psychiatry, 44*, 608–615.

Lintvedt, O. K., Griffiths, K. M., Sorensen, K., Ostvik, A. R., Wang, C. E. A., Eisemann, M., et al. (2013). Evaluating the effectiveness and efficacy of unguided internet-based self-help intervention for the prevention of depression: A randomized controlled trial. *Clinical Psychology & Psychotherapy, 20*(1), 10-27. https://doi.org/10.1002/cpp.770

Lo, K., Gupta, T., & Keating, J. L. (2018). Interventions to promote mental health literacy in university students and their clinical educators. A systematic review of randomised control trials. *Health Professions Education, 4*, 161–175.

McLean, K. B. A., & Swanbrow Becker, M. A. P. (2018). Bridging the Gap: Connecting Resident Assistants and Suicidal Residents Through Gatekeeper Training. *Suicide and Life-Threatening Behavior, 48*(2), 218-229.

Mental Health First Aid Australia. (2020). *Our impact*. Retrieved 8 March from https://mhfa.com.au/our-impact/our-global-impact

Mesidor, J. K., & Sly, K. F. (2016). Factors that contribute to the adjustment of international students. *Journal of International Students, 6*, 262–282.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med, 6*, e1000097.

Moll, S. E., Patten, S., Stuart, H., MacDermid, J. C., & Kirsh, B. (2018). Beyond silence: A randomized, parallel-group trial exploring the impact of workplace mental health literacy training with healthcare employees. *The Canadian Journal of Psychiatry, 63*, 826–833.

Morgan, A. J., Ross, A., & Reavley, N. J. (2018). Systematic review and meta-analysis of Mental Health First Aid training: Effects on knowledge, stigma, and helping behaviour. *PLoS One, 13*, e0197102.

Nozawa, H., Ikegami, K., Michii, S., Sugano, R., Ando, H., Kitamura, H., & Ogami, A. (2019). Peer counseling for mental health in young people—Randomized clinical trial –. *Mental Health and Prevention, 14*.

O'Connell, J., Pote, H., & Shafran, R. (2021). Child mental health literacy training programmes for professionals in contact with children: A systematic review. *Early Intervention in Psychiatry, 15*, 234–247.

O'Reilly, C. L., Bell, J. S., & Chen, T. F. (2012). Mental health consumers and caregivers as instructors for health professional students: A qualitative study. *Social Psychiatry and Psychiatric Epidemiology, 47*(4), 607-613. https://doi.org/10.1007/s00127-011-0364-x

Orygen. (2017). *Under the radar. The mental health of Australian university students*. T. N. C. o. E. i. Y. M. H. Orygen.

Patalay, P., Annis, J., Sharpe, H., Newman, R., Main, D., Ragunathan, T., Parkes, M., & Clarke, K. (2017). A pre-post evaluation of OpenMinds: A sustainable, peer-led mental health literacy programme in universities and secondary schools. *Prevention Science, 18*, 995–1005.

Pearce, K., Rickwood, D., & Beaton, S. (2003). Preliminary evaluation of a university-based suicide intervention project: Impact on participants. *Australian E-Journal for the Advancement of Mental Health, 2*(1), 25-35.

Reavley, N. J., McCann, T. V., & Jorm, A. F. (2012). Mental health literacy in higher education students. *Early Intervention in Psychiatry, 6*, 45–52.

Reavley, N. J., McCann, T. V., Cvetkovski, S., & Jorm, A. F. (2014). A multifaceted intervention to improve mental health literacy in students of a multicampus university: A cluster randomised trial. *Social Psychiatry and Psychiatric Epidemiology, 49*(10), 1655-1666. https://doi.org/10.1007/s00127-014-0880-6

Saleh, D., Camart, N., Sbeira, F., & Romo, L. (2018). Can we learn to manage stress? A randomized controlled trial carried out on university students. *PLoS One, 13*, 1–20.

Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of Studies in International Education, 12*, 148–180.

Sharp, W., Hargrove, D. S., Johnson, L., & Deal, W. P. (2006). Mental health education: An evaluation of a classroom based strategy to modify help seeking for mental health problems. *Journal of College Student Development, 47*(4), 419-438.

Shea, B. J., Reeves, B. C., Wells, G., Thuku, M., Hamel, C., Moran, J., Moher, D., Tugwell, P., Welch, V., & Kristjansson, E. (2017). AMSTAR 2: A critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ, 358*, j4008.

Skopec, M., Issa, H., Reed, J., & Harris, M. (2020). The role of geographic bias in knowledge diffusion: A systematic review and narrative synthesis. *Research Integrity and Peer Review, 5*, 2.

Storrie, K., Ahern, K., & Tuckett, A. (2010). A systematic review: Students with mental health problems—A growing problem. *International Journal of Nursing Practice, 16*, 1–6.

Sullivan, C., & Kashubeck-West, S. (2015). The interplay of international students' acculturative stress, social support, and acculturation modes. *Journal of International Students, 5*, 1–11.

Tabor, E., Patalay, P., & Bann, D. (2021). Mental health in higher education students and non-students: Evidence from a nationally representative panel study. *Social Psychiatry and Psychiatric Epidemiology*, 1–4.

Thombs, D. L., Gonzalez, J. M. R., Osborn, C. J., Rossheim, M. E., & Suzuki, S. (2015). Resident assistant training program for increasing alcohol, other drug, and mental health first-aid efforts. *Prevention Science, 16*, 508–517.

Thorley, C. (2017). *Not By Degrees: Improving student mental health in the UK's Universities*. IPPR. http://www.ippr.org/research/publications/not-by-degrees

Wei, Y., Carr, W., Alaffe, R., & Kutcher, S. (2020). Mental Health Literacy Development: Application of Online and In-Person Professional Development for Preservice Teachers to Address Knowledge, Stigma, and Help-Seeking Intentions. [Article]. *Canadian Journal of Behavioural Science, 52*(2), 107-114. https://doi.org/10.1037/cbs0000164

Wyatt, T., & Oswalt, S. B. (2013). Comparing mental health issues among undergraduate and graduate students. *American Journal of Health Education, 44*, 96–107.