



Mental health training programs for community pharmacists, pharmacy staff and students: A systematic review

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ABSTRACT

Background: Primary care is often the first point of contact for people living with mental disorders. Community pharmacists, pharmacy staff and students are increasingly being trained to deliver mental health care. However, there is still a gap in the literature exploring the characteristics of all available mental health training programs and their components and their influence on pharmacists, pharmacy staff and students' outcomes.

Objectives: To summarize the evidence evaluating mental health training programs completed by community pharmacists, pharmacy staff and students. More specifically, to explore the components of mental health training programs and identify those that facilitate significant improvements in outcomes.

Methods: A systematic review was conducted following the Cochrane handbook and reported according to PRISMA guidelines. A search for published literature was conducted in three databases (PubMed, Scopus, and Web of Science) in July 2021. Eligible studies were included if they described and evaluated the impact of mental health training programs delivered to community pharmacists, pharmacy staff and pharmacy students regardless of design or comparator. The methodological quality of included studies was appraised using both the NIH quality assessment, to evaluate studies with an uncontrolled pre-post design, and the Cochrane EPOC risk of bias assessment, to evaluate studies with a controlled (randomized and non-randomized) study design.

Results: Thirty-three studies were included. Most of the identified mental health training programs contained knowledge-based components and active learning activities. Changes in participants' attitudes, stigma, knowledge, confidence and skills were frequently assessed. An extensive range of self-assessment and observational instruments used to evaluate the impact of the training programs were identified. Positive improvements in participants' attitudes, knowledge and stigma were frequently identified following participation in training programs.

Conclusions: This systematic review highlights the importance of mental health training programs in increasing pharmacists', pharmacy staff and pharmacy students' skills and confidence to deliver mental health care in community pharmacy. Future research should build upon this basis and further focus on finding the most efficient measures to evaluate these training programs and assess their long-term effectiveness, allowing comparison between programs.

1. Introduction

Mental health problems contribute significantly to the overall disease burden worldwide.¹ In 2017, it was estimated that this global problem affected 792 million people, with depression and anxiety being the most prevalent mental health disorders.² Moreover, suicide accounted for 1.3% of all deaths worldwide, making it the 17th leading cause of death in 2019.³ Although knowledge about the available

treatments for mental health problems has increased, there is still a considerable proportion of people living with mental disorders who do not seek help.^{4,5} This is an inherent element that contributes to the exacerbation of symptoms over time.^{6,7} Between 2011 and 2030, it has been estimated that the cost of mental ill-health to the global economy will be \$16.3 trillion. This will have severe impacts on global socio-economic development and standards of living.⁸

Issues around access to mental health specialists in regional and rural

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areas and the reluctance of some patients to accept a mental health referral have highlighted the importance of primary care in mental health care delivery.⁹ Specifically, primary care providers (e.g., general practitioners and pharmacists) are providing mental health support including early identification of mental disorders, treatment of common mental disorders, management of stable psychiatric patients and referral to specialists.¹⁰ While primary care is often the first point of contact within the health system,⁹ screening rates for mental health disorders in some primary care settings still appear to be relatively low.¹¹ Interdisciplinary collaboration between primary care providers has shown to enhance the treatment of mental health disorders and improve clinical outcomes for patients.^{12–15} The importance of collaboration in primary care is particularly pertinent in rural and remote areas where communities are isolated and resources are limited.¹⁶ The delivery of collaborative mental health care in primary care settings has been identified as a cost-efficient strategy for a range of mental health disorders across diverse populations.¹⁷

International institutions and government agencies have supported the integration of community pharmacists in multidisciplinary primary care teams due to their proven skills in resolving and preventing drug-related problems; ensuring the safe and efficacious use of medicines; providing comprehensive drug information; promoting medication adherence, and health promotion and lifestyle modification for their communities.¹⁸ Community pharmacists as front-line providers are usually an initial point of contact for people living with mental health disorders, or those at-risk, due to their high accessibility.¹⁹ Community pharmacy-based depression screening programs have shown to increase the early detection of depression, leading to early intervention for people who may not otherwise have sought help for their mental health disorders.²⁰ Furthermore, community pharmacists' role in mental health care has been shown to enhance patients' knowledge, beliefs, and sense of treatment progress related to psychotropics (e.g., antidepressants).²¹ There is evidence that psychotropic drugs are often misused and their appropriate use is central to the effective management of mental disorders.²² Community pharmacists have proven that they can work closely with people with lived experience of mental disorders to improve medication related outcomes, including those related to polypharmacy, deprescribing and in facilitating withdrawal from medications.²³ These findings demonstrate the continued and potential impact of community pharmacists in the delivery of mental health care.

Community pharmacists, pharmacy students and staff are increasing their knowledge and skills in this area through participation in specific mental health training programs, such as the Mental Health First Aid (MHFA) course. The MHFA course was initially developed in 2000 with the aim of teaching community members how to recognize the symptoms of different mental disorders and mental health crises, how to offer and provide initial help, including guiding a person towards appropriate treatments and supportive help.²⁴ A blended MHFA (BMHFA) course was subsequently developed for pharmacy, which combines 6–8 h of self-paced online learning followed by a practical classroom-based session (delivered face-to-face or by live webinar).²⁵

The delivery and effectiveness of MHFA and BMHFA has been widely studied and assessed across health disciplines.^{26–31} While systematic reviews focused on the effectiveness of mental health training programs in different populations (e.g., university students including those from pharmacy) have been conducted,^{29,30,32} there remains a gap in research examining all available mental health training programs (including BMHFA and other mental health training) delivered to pharmacists, pharmacy students or staff. Furthermore, the components of these training programs that facilitate significant improvements in outcomes need to be examined in detail.

Therefore, this systematic review aims to summarize the evidence of all published literature evaluating mental health training programs for pharmacists, pharmacy students or staff. In addition, this review aims to explore the components of mental health training programs, determine the outcomes assessed among pharmacists, pharmacy students or staff

and the instruments used to evaluate these outcomes. Previously published systematic reviews differ from this present review, as none provide an exclusive focus in the context of community pharmacy. This review provides a unique perspective though its focus on the mental health training programs supporting pharmacies and their teams.

2. Methods

A systematic review evaluating mental health training programs, delivered to community pharmacists, pharmacy students or staff, was conducted following the Cochrane Handbook for Systematic Reviews of Interventions. The review was reported according to the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidelines,^{33–35} using the updated 2020 PRISMA flow diagram.³⁵ Details of the protocol for this systematic review can be found in the PROSPERO international prospective register of systematic reviews database (registration CRD42021264201).

2.1. Search strategy

In a preliminary scoping search of databases, key papers which were suitable to be included in the review were identified. The search strategy was then developed using keywords identified from these key papers as search terms. The search strategy was reviewed and revised by three authors (CCG, SDG, JR) to ensure a robust search strategy and reproducibility of key papers within search results. The search strategy (Table 1) included terms related to community pharmacy personnel (e.g., “community pharmacists”, “pharmacy staff”) AND mental health training (e.g., “mental health education” AND “mental health first aid”).

A comprehensive search was undertaken in three databases including PubMed, Scopus and Web of Science and search strategies were modified for each individual database. The literature search was conducted in July 2021 with no time restrictions. The search was limited to papers written in English or Spanish languages. Reference lists of previous systematic reviews were also searched to ensure all relevant articles were captured and included. The complete results from all databases were imported and managed in an EndNote X9 library and saved without duplication.

2.2. Screening

The screening, selection and review of published articles followed a three-phase process. Initially, titles and abstracts of articles were independently examined, screened and irrelevant records were excluded by two researchers (CCG, SDG). This process was over-inclusive to ensure relevant papers were not overlooked. During the second phase, a full-text review was conducted for articles and assessed for eligibility according to inclusion and exclusion criteria (described in detail below).

Table 1
Search strategy.

Database	Search strategy
PubMed	(“pharmacist” OR “pharmacists” OR “pharmacy staff” OR “community pharmacy” OR “pharmacy” [MeSH Terms]) AND (“mental health training” OR “mental health first aid” OR “mental health first aid training” OR “mental health education” OR “training in mental health” OR “MHFA” OR “depression” [MeSH Terms] OR “mental health” [MeSH Terms])
Scopus	TITLE-ABS-KEY (“mental health training” OR “mental health first aid” OR “mental health first aid training” OR “mental health education” OR “MHFA” OR “training in mental health”) AND ALL (“pharmacist*” OR “pharmacy staff” OR “community pharmacy” OR “pharmacy”)
Web of Science	TS=(“mental health training” OR “mental health first aid” OR “mental health first aid training” OR “mental health education” OR “MHFA” OR “training in mental health”) AND TS=(“pharmacist*” OR “pharmacy staff” OR “community pharmacy” OR “pharmacy”)

Lastly, reference lists from included articles, and previously published systematic reviews in the topic area, were reviewed by one author (CCG) to identify any articles which may have been missed.

A data collection tool to extract the information of the included studies was developed using the Cochrane Handbook for Systematic Reviews of Interventions and the Cochrane Effective Practice and Organization of Care Group (EPOC) data collection form and checklist.^{36–38} Data was extracted from included studies on study design (e.g., setting, participants, recruitment method etc.), details of the intervention (e.g., aim, type, components, length of training), evaluation methods (e.g., instruments used) and the impact on outcomes among community pharmacy personnel.

2.3. Summary of inclusion and exclusion criteria

Included articles were (i) primary research studies; (ii) studies evaluating the impact of mental health training programs delivered to community pharmacists or pharmacy students or pharmacy staff personnel; and (iii) studies reporting quantitative outcomes. Studies describing the same training program but evaluating different outcomes were included. Excluded articles were (i) non-primary research studies (i.e., literature reviews and study protocols); (ii) studies in which the measured outcomes pertaining to community pharmacy personnel could not be separated from other participants (e.g., other healthcare professionals); and (iii) studies in which mental health training was part of another intervention not focused specifically on mental health and

outcomes could not be attributed to the mental health training program alone. Studies were not excluded based on study design or comparator (i.e., studies were not required to have a control comparison group).

2.4. Assessment of risk of bias

The methodological quality of studies was appraised using a range of tools depending on study design. Uncontrolled studies were assessed using the National Institutes of Health (NIH) Quality Assessment Tool for Before-After (Pre-Post) studies with No Control Group.³⁹ The risk of bias in studies with a randomized and non-randomized controlled trial design was assessed using the Cochrane EPOC Risk of bias tool for controlled studies.⁴⁰ The EPOC tool contains nine domains of bias including random sequence generation; allocation concealment; baseline outcome measurements; baseline characteristics; completeness of outcome data; blinding of outcome measurements; protection against contamination; selective outcome reporting; and other risks of bias. Individual studies were assessed by domain. All bias domains were rated as unclear (i.e., “plausible bias unlikely to seriously alter the results”), low risk (i.e., “plausible bias that raise some doubt about the results”), or high risk (i.e., “plausible bias that seriously weakens confidence in the results”). Risk of bias judgements were made independently by two review authors (CCG, SDG), and any disagreements were discussed and resolved. No papers were excluded as a result of quality assessment.

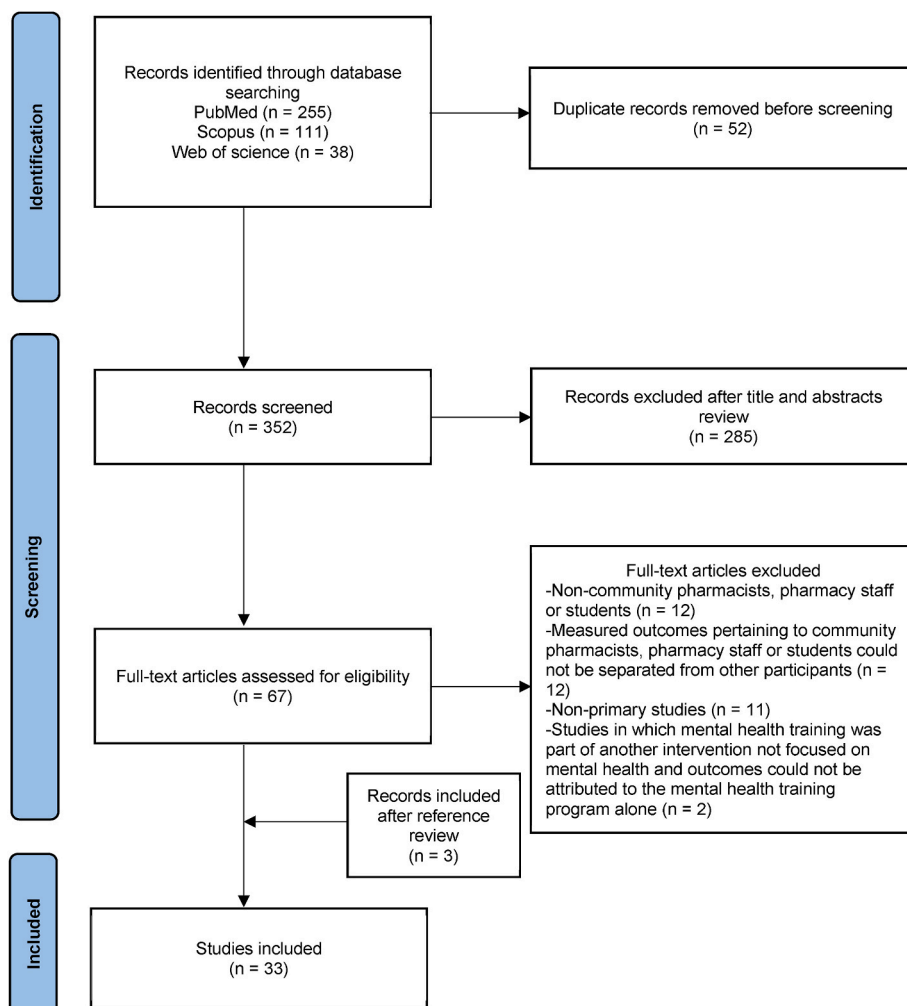


Fig. 1. PRISMA flow diagram of search results and screening.

3. Results

3.1. Study selection

Articles were retrieved from PubMed (n=255), Scopus (n=111) and Web of Science (n=38) (Fig. 1). Three hundred and fifty-two (n=352) records were screened by title and abstract. After reviewing 67 full texts, 30 articles fulfilled the inclusion criteria. Three additional articles were retrieved after reference review, and thus, a total of 33 articles were included in this systematic review. The reasons for the exclusion of full-text articles are reported in Fig. 1. A completed PRISMA checklist can be found as Supplementary file 1.

3.2. Description of included studies

Descriptive characteristics of individual studies are detailed in Table 2.

3.2.1. Country of study

The majority of studies were conducted in the United States (n=18)^{41–58} and Australia (n=10).^{59–68} Three studies were undertaken in Canada^{69–71} and two in Belgium.^{72,73}

3.2.2. Study design

The most common study designs were uncontrolled pre-post studies (n=16),^{41–43,45,46,50,52,54–58,62,64–66} with less commonly encountered designs being non-randomized clustered controlled trials (n=2),^{59,61} cluster-randomized controlled trials (n=2),^{72,73} randomized controlled trials (n=2),^{69,70} uncontrolled post-only designs (n=2),^{48,49} non-randomized controlled trials (n=2),^{65,68} and a parallel-group repeated measures design (n=1).⁶⁰

3.2.3. Audience

Most of the included studies described and evaluated a mental health training program undertaken by pharmacy students during their Bachelor of Pharmacy or Doctor of Pharmacy degree (n=23).^{41–43,46,47,50–60,62–65,68,70,71} The training was provided in most cases to students in their first (n=3),^{43,58,62} third (n=8),^{41,42,52,53,55,59,68,70} or fourth years (n=5)^{54,60,63,68,70} of their Pharmacy program. The training was integrated as part of the university curriculum in four studies^{58,60,62,63} and in most cases was delivered exclusively to pharmacy students. Two studies reported delivering the context to both pharmacy students and students from other health disciplines.^{46,62} Additional studies reported training of community pharmacists and pharmacy staff (n=10)^{44,45,48,49,61,66,67,69,72,73} and in some specific cases, community pharmacists located in rural and remote areas (n=2).^{61,66}

3.2.4. Training program

The most common training provided was the standard MHFA (n=7),^{46,48,49,56,60,63,65} training in suicide prevention (n=5)^{44,45,50,58,71} and depression management training (n=4).^{55,61,72,73} The majority of these programs were provided face-to-face (n=29),^{41–57,59,60,62–71} while the remainder delivered the training using a combined approach (i.e., face-to-face and online) (n=2)^{58,73} or online only (n=2).^{61,67} The duration of the training program varied across studies from short courses of up to 4 h (n=13)^{41–45,50,52,55,58,67,68,70,71} to more intense programs of 5–12 h (n=8).^{46,48,49,56,60,63,65,66} In some instances, the training programs lasted one full day or training was provided over multiple days or weeks (n=12).^{47,51,53,54,57–60,64,72,73} A full description of the training programs and their components is provided in Supplementary file 2.

3.3. Mental health training program components

3.3.1. Mental health training programs delivered to community pharmacists and pharmacy staff

Educational components incorporated as part of the training program included the nature of the conditions, causes, indications for the use of psychotropics, drug and non-drug treatments options.^{44,45,48,49,61,66,72,73} Role play with simulated cases,^{45,69,72,73} interviews of interactions between consumer-educators,^{72,73} counselling and dispensing activities (e.g., communication, provision of information, use of software) were also included.^{61,67,72,73}

3.3.2. Mental health training programs delivered to pharmacy students

Most of the programs delivered to pharmacy students contained a component to increase the knowledge about mental health or specific conditions (e.g., terminology, prevalence data, causes, signs and symptoms). These were delivered using lecture-style presentations,^{41–43,50,51,55–57,63–65,70} educational videos,^{46,52,58,62} or discussing lived experiences.^{43,50,55,58,65} Active learning activities such as role-plays,^{41,42,52,55,56,59,62,63,71} group discussions,^{41,42,46,51,52,55,56,58,62,63} live discussions with specialists,⁴⁷ book clubs,⁴⁷ clinical rotations,⁵⁴ medication education groups⁵⁷ and visits to hospitals⁵¹ were also included as part of the student training programs.

Consumer educators (i.e., a person with a lived experience with mental disorders receiving ongoing treatment) were included in some training programs,⁵⁹ who discussed their life experiences,^{43,51,55,64,68,70} and in some instances, were interviewed by students.^{43,51,55} Additionally, in one study, consumer-educators were involved as part of role-play scenarios.⁶⁰

3.4. Study outcomes and instruments

The most frequently reported outcomes among pharmacists, students or staff included participants' attitudes, stigma, knowledge, confidence and skills. A full description of the outcomes assessed, and the instruments used to evaluate outcomes, can be found in Supplementary file 2.

3.4.1. Attitudes and stigma

Participants' attitudes and stigma were evaluated from different perspectives in 23 studies.^{41–46,49–54,56,57,59,60,64,65,67,68,70–72} Participants' attitudes towards people with severe mental disorders were assessed using 6-items from the Attribution Questionnaire (AQ) on a 5-point Likert scale.⁵⁹ Attitudes Towards Suicide were also assessed using the Attitudes Towards Suicide Scale (ATTS).^{60,71} A scale containing 12 negative and 1 positive statement was used in a study to measure participants' attitudes towards suicide prevention.⁴⁴ A study measured participants' attitudes towards depression using a 26-item questionnaire.⁶⁷

Stigmatizing attitudes were most frequently assessed using the SDS containing 7-items to measure participants' readiness to engage with people living with mental disorders.^{46,51,54,65,72} Additionally, the Attitudes to Mental Illness Questionnaire (AMIQ) was also used in one of the studies to assess stigmatizing attitudes in response to short fictional vignettes, with responses scored on a 5-point Likert scale.⁴⁶ Three studies used a 16-item questionnaire (derived from two surveys^{74,75} of medical students, doctors and the public) assessing stigmatizing beliefs towards depression and schizophrenia using a 5-point Likert scale score.^{59,64,68} The Opening Minds Stigma Scale for Health Care Providers (OMS-HC) was used to measure stigma in another two studies.^{52,70}

Pharmacists' attitudes towards the provision of services to people with mental disorders⁶⁸ and with schizophrenia⁵⁹ were measured using

Table 2
Description of included studies.

Author and year	Country	Study design	Participants	Participant recruitment	Incentive	Training program	Delivery mode	Training provider	Program duration	Number of groups	Number of participants included in the analysis	Comparator
Bamgbade et al. 2016 ⁴²	United States	Uncontrolled pre-post design	Third year pharmacy students	All students enrolled in a 3-credit hour pharmacoeconomics course during spring 2014	No	Anti-stigma intervention program	Face-to-face	Primary researcher	2.5 h	1	88	Not Applicable (n/a)
Bamgbade et al. 2017 ⁴¹	United States	Uncontrolled pre-post design	Third year pharmacy students	All students enrolled in a 3-credit hour pharmacoeconomics course during spring 2014	No	Anti-stigma intervention program	Face-to-face	Primary researcher	2.5 h	1	88	n/a
Bell et al. 2006 ⁵⁹	Australia	Non-randomized, clustered, comparative design	Third year pharmacy students	Not Reported (NR)	No	Consumer-educator mental health education program	Face-to-face	1.Pharmacist instructor 2.Consumer educators (i.e., a person who is receiving mental health care works to inform and educate people about the effects of mental illness on individuals, families, and society. All consumers had previously participated in a 3-day public speaking course)	1. Mental health lectures prior to the commencement of the program (7 × 1 hour) 2.Tutorial classes (1 × 2 hours) in collaboration with consumer educators.	2 (intervention and comparison)	211 (117 intervention group, 97 comparison group)	Standard mental health program: 1.Initial seven mental health lectures (for all students) 2.1 tutorial class (without contact with consumers)
Boukouvalas et al. 2018 ⁶⁰	Australia	Parallel-group repeated measures design	Final year pharmacy students undertaking Bachelor of Pharmacy (BPharm) and Master of Pharmacy (MPharm) degrees	Included in their curricula	No	Standard Mental Health First Aid (MHFA) (provided to all students prior to the commencement of simulated patient scenarios)	Face-to-face	1.Tutor 2.Consumer educator	MHFA (12 h)	3 (BPharm participants, BPharm observer group, MPharm comparison)	252 (34 participants, 104 observers, 50 comparison group)	MHFA plus mental health case-based tutorial session with no contact with consumers.
Buhler et al.2008 ⁴³	United States	Uncontrolled pre-post design	First year students in the School of Pharmacy	All first-year students enrolled in the School of Pharmacy were asked to voluntarily complete the survey during class time	No	A curricular approach using peer-level patient/family presenters (schizophrenia and clinical depression)	Face-to-face	Patient/family presenters	Peer-level patient/family presentation components included in the curriculum (2 h)	1	48 students (34 attended the presentation on clinical depression and 42 attended the schizophrenia presentation)	n/a

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Table 2 (continued)

Author and year	Country	Study design	Participants	Participant recruitment	Incentive	Training program	Delivery mode	Training provider	Program duration	Number of groups	Number of participants included in the analysis	Comparator
Cates et al. 2017 ⁵⁴	United States	Uncontrolled pre-post design	Fourth-year pharmacy students at one school of pharmacy approximately 25 contact hours of psychiatric therapeutics as third-year students	Participation was voluntary. Participants in the survey were fourth-year pharmacy students who took part in the psychiatric clinical rotation over a 2-year time frame.	No	Psychiatric clinical rotation	Face-to-face	NR	5-week, elective advanced pharmacy practice experience.	1	41	n/a
Cates et al. 2017 ⁴⁴	United States	Uncontrolled pre-post design	Pharmacists	The program was advertised online, and a save the date postcard was sent to all the licensed pharmacists. Online registration was required	No	Continuing pharmacy education	Face-to-face	Board-certified psychiatric pharmacist	1 h	1	99	n/a
Crockett et al. 2009 ⁶¹	Australia	Non-randomized, clustered comparative design	Rural community pharmacists	Pharmacies were contacted by letter and invited to participate in the project	No	Depression training	Telehealth videoconferencing	Psychiatrist, psychologist, and general practitioner	NR	2 (intervention and control group)	29 (14 intervention, 15 control)	Usual care
Dean et al. 2020 ⁵⁵	United States	Uncontrolled pre-post design	Third year pharmacy students who were enrolled in the Community Care Clinical Skills (CCCS)	Third year pharmacy students who were enrolled in the CCCS and who previously completed didactic psychiatric pharmacotherapy training.	No	Depression counselling intervention	Face-to-face	Licensed psychologist and consumer educator	2.5 h	1	18	n/a
De Silva et al. 2015 ⁶²	Australia	Uncontrolled pre-post design	First year pharmacy students (also delivered to medical and paramedic students)	Included in their curricula	No	Community-based suicide awareness and intervention program	Face-to-face	Trained staff (not specified)	5 h	1	54	n/a
Dipaula et al. 2011 ⁵¹	United States	NR	Third year Doctor of Pharmacy (PharmD) students	All third-year pharmacy students could enrol in this subject	2-credit didactic elective course	Perspectives of Mental Health (didactic elective course)	Face-to-face and online	Course instructor and presenters (e. g., forensic speakers, patients with mental illness)	13 sessions (2 h)	2 (intervention and control group)	278 (43* intervention and 234 control) *The 43 students completed the course between 2007 and 2009	Students who did not take the elective

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Table 2 (continued)

Author and year	Country	Study design	Participants	Participant recruitment	Incentive	Training program	Delivery mode	Training provider	Program duration	Number of groups	Number of participants included in the analysis	Comparator
Douglass et al. 2019 ⁵²	United States	Uncontrolled pre-post study	Third professional year pharmacy students	All students enrolled in the Comprehensive Disease Management course seminar	No	Social media focused intervention	Face-to-face	Pharmacist affiliated with the North Eastern University School of Pharmacy	1.5 h	1	93	n/a
El-Den et al. 2018 ⁶³	Australia	NR	Fourth year BPharm students	Included in their curricula	No	Standard MHFA	Face-to-face	Accredited MHFA instructor and registered pharmacist	12 h	1	143 completed MHFA and 36 completed the post-natal and suicide prevention role play	n/a
Frick et al. 2021 ⁵⁶	United States	Uncontrolled pre-post	Third year students PharmD enrolled in the Patient Care Experience (PCE) II course. Participants were excluded if had completed MHFA Training.	Included in their curricula. (Completion of the surveys was voluntary)	No	Standard MHFA	Face-to-face	PCE faculty members previously trained in MHFA	8 h	1	111	n/a
Gable et al. 2010 ⁵³	United States	NR	Third year pharmacy students.	Offered to third year pharmacy students at School of Pharmacy after completion of the required Psychiatry and Neurology Integrated Pharmacotherapy course	No	Mental Health clinical elective course	Face-to-face	NR	15 weeks	2 (Intervention/control)	40 (23 Intervention/17 control)	A control group of students enrolled in a different clinical elective not focused on the topic of mental illness. Usual care
Liekens et al. 2014 ⁷³	Belgium	Cluster-randomized controlled trial	Pharmacies of the Surplus Network	A random subset of pharmacies was selected	No	Depression training program	Face-to-face	Two students of the Master of Pharmaceutical care	1 full day	2 (intervention and control group)	40 (21 intervention, 19 control)	Usual care
Liekens et al. 2013 ⁷²	Belgium	Randomized, clustered, comparative design	Pharmacies of the Surplus Network	All pharmacists attending obligatory regional meetings of the Surplus Network during April and May 2009 were asked to complete and return a survey instrument (baseline measurement) at the end of the meeting. The completion of the survey was not compulsory	No	Depression training program	Combined (face-to-face and online)	Lecturer in pharmacotherapy/ pharmaceutical care, clinical psychologist, consumer educator (i.e., consumer educators had been taking antidepressants for at least 1 year and had previous experience in medical training programs)	1 full day	2 (intervention and control group)	89 (53 intervention, 36 control)	Usual care

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Table 2 (continued)

Author and year	Country	Study design	Participants	Participant recruitment	Incentive	Training program	Delivery mode	Training provider	Program duration	Number of groups	Number of participants included in the analysis	Comparator
McCormack et al. 2018 ⁴⁶	United States	Uncontrolled pre-post design	First to fourth year pharmacy students	Invited to participate via email but participation was voluntary	No	Standard MHFA	Face-to-face	Mental Health America affiliate	8 h	1	34	n/a
McLaughlin et al. 2017 ⁵⁷	United States	Uncontrolled pre-post design	Second and third professional year students in the Doctor of Pharmacy degree program.	All second- and third-year students were invited to attend an information and training session for the program via email to all students by a non-teaching member of the faculty.	No	Psychiatry Medication Education Group (PMEG) program	Face-to-face	Two pharmacists from University of North Carolina (UNC) Medical Center that also served as adjunct faculty for the school.	Training (45 min) and volunteer and sign up for medication education groups at the hospital (45 min or more depending on the number of groups in which they participated)	1	27	n/a
Murphy et al. 2015 ⁶⁹	Canada	Controlled study	Pharmacists	Pharmacists and community members were invited to participate via several mechanisms (e.g., communications via pharmacy and mental health psychologist)	No	More Than Meds and a telephone-based simulated scenario	Face-to-face	Trained actors and pharmacist's community members play	1 full day	2 (intervention and control group)	63 (29 intervention, 34 control)	Usual care
Nguyen et al. 2012 ⁶⁸	Australia	A non-randomized, two-group, comparative study design	Third- and fourth year BPharm students	All students enrolled in the third and four years	No	Mental health direct and indirect contact intervention	Face-to-face	Tutor and consumer educators	2-h workshops	2 (direct contact/ indirect contact)	244 (direct contact 122/ indirect 122)	The indirect contact intervention involved film clips involving mental health consumer educators (MHCEs)
O'Reilly et al. 2010 ⁶⁴	Australia	Uncontrolled pre-post follow-up design	Third year BPharm students	All third-year students were invited to participate	No	Consumer-led mental health education	Face-to-face	Pharmacists' tutors and consumer educators	1. Mental health lectures prior to the commencement of the program (7 × 1 hour) 2. Tutorial classes (1 × 2 hours)	1	178	n/a
O'Reilly et al. 2011 ⁶⁵	Australia	Non-randomized controlled trial	Third year BPharm students	All third-year students were invited to participate	No	Standard MHFA	Face-to-face	MHFA instructor	12 h	2 (intervention and control group)	223 (53 intervention group, 170 control group)	Usual care

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Table 2 (continued)

Author and year	Country	Study design	Participants	Participant recruitment	Incentive	Training program	Delivery mode	Training provider	Program duration	Number of groups	Number of participants included in the analysis	Comparator
Painter et al. 2017 ⁴⁵	United States	Uncontrolled pre-post design	Pharmacists	Pharmacists were invited to attend a training session using listservs from professional psychologists, personal contacts, websites, and e-mail announcements to pharmacist preceptors and residents	No	Suicide prevention training	Face-to-face	At least 1 trainer from Community Health Improvement Partners, and an academic trainer	1.5 h	1	77	n/a
Patten et al. 2012 ⁷⁰	Canada	Randomized controlled trial	Third- and fourth-year pharmacy students in an undergraduate pharmacy program at 3 universities	Integrated as part of the mental health curriculum	No	Contact-based education for reducing mental illness-related stigma	Face-to-face	- Course professor/ - People with lived experiences of mental illness	1–2 h (depending on the university)	2	87 (36* early intervention/ 51 late intervention) *Participants across the three universities	The educational content did not differ between the groups, only the order in which different educational activities were delivered. Those not receiving the intervention early participated later, near the end of the unit.
Robinson et al. 2020 ⁴⁷	United States	Uncontrolled pre-post design	Second- and third-year students	Elective course of a PharmD program	No	MHFA elective course	Face-to-face	Two faculty members and student instructor	8 classes of 1–8 h	1	31	n/a
Shams et al. 2020 ⁶⁶	Australia	Uncontrolled pre-post design	Queensland community pharmacy staff	Community pharmacies were invited via email and telephone to inform staff members of funded MHFA training sessions. Staff members were provided with brochures to also invite local consumers to the training. The training was also promoted through local channels such as regional councils,	No	Standard MHFA with consumers	Face-to-face	NR	12 h	1	32	n/a

(continued on next page)

Table 2 (continued)

Author and year	Country	Study design	Participants	Participant recruitment	Incentive	Training program	Delivery mode	Training provider	Program duration	Number of groups	Number of participants included in the analysis	Comparator
Vincent et al. 2016 ⁷¹	Canada	NR	Third year pharmacy students	health services and Primary Health Network e-newsletters Included the opening session of a 45-h psychiatry course	No	Suicide prevention intervention	Face-to-face	NR	90 min (divided in 4 parts)	1	170	n/a
Wheeler et al. 2018 ⁶⁷	Australia	Uncontrolled pre-post design	Community pharmacists and pharmacy staff	An expression of interest process was undertaken with all community pharmacies in 3 regions of Australia, which invited responses from prospective participants	Yes (financial reimbursement and certificate of participation)	A web-based mental health promotion intervention (based on the intervention Mapping Framework)	Online	Health psychologist (i.e., psychiatrists, psychologist and pharmacists, consumers and carers who had lived experiences of mental illness (particularly depression and anxiety)	4 h	2 groups both received intervention (group 1 immediate access, group 2 delayed access)	566 participants (229 group 1, 337 group 2)	n/a
Willson et al. 2020 ⁵⁸	United States	Uncontrolled pre-post design	First-year pharmacy students	Included in their curricula	Yes (course participation points to those who completed the survey)	Suicide prevention training program	Combined (online and face-to-face)	NR	3.5 h	1	156	n/a
Witry et al. 2020 ⁴⁸	United States	Uncontrolled post-only design	Pharmacy faculty, pharmacy students, and pharmacy technicians	Offered through a state pharmacy association to locals via an online signup, to student pharmacist groups, and to workshop attendees	Yes (8 h of continuing training credit)	Standard MHFA	Face-to-face	Trained MHFA pharmacist	8 h	1	98	n/a
Witry et al. 2020 ⁴⁹	United States	Uncontrolled post-only design	Pharmacy faculty, pharmacy students, and pharmacy technicians	Offered through a state pharmacy association to locals via an online signup, to student pharmacist groups, and to workshop attendees	Yes (8 h of continuing training credit)	Standard MHFA	Face-to-face	Trained MHFA pharmacist	8 h	1	96	n/a
Witry et al. 2020 ⁵⁰	United States	Uncontrolled pre-post design	Second-year students	Educational intervention was part of a 4-semester pharmacotherapy course on neurology and psychiatry	Yes (students received participation credit for attending the QPR training)	Suicide prevention intervention	Face-to-face	Psychiatric pharmacist and a certified QPR facilitator	160 min	1	111	n/a

Abbreviations: BPharm: Bachelor of Pharmacy; CCCS: Community Care Clinical Skills; MHFA: Mental Health First Aid; MPharm: Master of Pharmacy; n/a: Not Applicable; NR: Not Reported; PCE: Patient Care Experience; PharmD: Doctor of Pharmacy; PMEG: Psychiatry Medication Education Group; QPR: Question Persuade Refer.

10-items related to professional service delivery scored using a 5-point Likert Scale.⁶⁸ Attitudes regarding future roles in depression care were also considered and assessed using a 10-item scale.⁷²

3.4.2. Knowledge

Participants' knowledge was evaluated in 10 studies.^{42,43,47,50,56,58,62,65,66,70} Two studies measured participants' mental health knowledge using true or false statements^{42,56} and one other study, through yes or no responses.⁵² A study assessed participants' knowledge through case scenarios and short statements in which participants needed to answer using 5-point agreement scales from strongly agree to strongly disagree.⁶⁶ Combined yes/no questions and five-point Likert scale items were used in another study to assess participant knowledge.⁵⁸

3.4.3. Confidence

Participants' confidence and self-efficacy were assessed in most of the studies through self-assessment tools.^{41,48,55–58,60,63} In two studies, participants' confidence was evaluated through their performance in role plays.^{63,65} Participants' confidence to provide counselling services to people dealing with depression and schizophrenia was measured with two items on a 5-point Likert scale.⁴¹ Two studies^{45,50} assessed self-efficacy for suicide prevention through seven questions regarding confidence in identifying and responding to symptoms of suicide based on the train-the-trainer program previously developed for pharmacists.^{76,77} Confidence to provide MHFA was evaluated using a seven item⁴⁸ and eight item⁶³ tool, based on MHFA self-evaluated questions. Confidence was also assessed using a questionnaire containing statements about motivation and support barriers⁶⁷ and using a self-reported tool.⁶⁰ One study assessed participants confidence in identifying and responding to suicide symptoms through a series of seven questions.⁴⁵

3.4.4. Skills

Participants' mental health skills following training were assessed through role play and different measures were used to rate their performance. One study used an assessment rubric created based on the MHFA action plan (ALGEE) using a score from 0 to 2 and participants also self-assessed their skills.⁶³ Another study scored participants' skills (e.g., non-verbal communication, active listening) and audio recorded participants' interactions which were qualitatively evaluated.⁷³ In another study, participants responded to simulated patient care scenarios using yes or no answers (33 items). Pharmacist assessment and communication was then rated on a 7-point Likert scale and overall interaction quality was rated on a 10-point Likert scale.⁶⁹ Participants' skills were also measured using mental health vignettes in which participants were asked a series of questions that were coded and rated⁶⁵ or participants were required to answer using a 5-point agreement scale.⁶⁶ In another study, participants self-assessed their confidence and skills through a series of statements using 7-point Likert scales, multiple-choice answers and free-text responses.⁵⁸

3.5. Impact of training on outcomes

The overall impact of the training programs on participants' outcomes is summarized in Table 3. A description of studies' key findings can also be found in Supplementary file 2.

3.5.1. Attitudes and stigma

Seventeen studies reported significant improvements in participants' stigma and attitudes after training.^{42–46,51–53,56,59,64,65,67,68,70–72} A study conducted by Nguyen et al. found significant improvements in participants' attitudes towards mental disorders after training in both direct and indirect contact with consumer educators groups.⁶⁸ A single group study focused on suicide prevention training found significant changes

Table 3
Effect of mental health training on outcomes.

Author and year	Attitudes and Stigma	Attitudes towards counselling	Knowledge	Confidence and Self-efficacy	Comfortability	Skills
Bamgbade et al. 2016 ⁴²	+		+			
Bamgbade et al. 2017 ⁴¹		±		NS		
Bell et al. 2006 ⁵⁹	+	+				
Boukouvalas et al. 2018 ⁶⁰	NS			+		
Buhler et al. 2008 ⁴³	+		±			
Cates et al. 2017 ⁵⁴	NS	+				
Cates et al. 2017 ⁴⁴	±					
Crockett et al. 2009 ⁶¹						NS
Dean et al. 2020 ⁵⁵				+	±	
De Silva et al. 2015 ⁶²			±	+		
Dipaola et al. 2011 ⁵¹	±					
Douglass et al. 2019 ⁵²	±					
El-Den et al. 2018 ⁶³				NS		NS
Frick et al. 2021 ⁵⁶	±		NS	+		NS
Gable et al. 2010 ⁵³	±					
Liekens et al. 2014 ⁷³						±
Liekens et al. 2013 ⁷²	±	+				
McCormack et al. 2018 ⁴⁶	±					
McLaughlin et al. 2017 ⁵⁷	NS			+		
Murphy et al. 2015 ⁶⁹						±
Nguyen et al. 2012 ⁶⁸	+					
O'Reilly et al. 2010 ⁶⁴	+	+				
O'Reilly et al. 2011 ⁶⁵	+		+	+	+	±
Painter et al. 2017 ⁴⁵	+			±		
Patten et al. 2012 ⁷⁰	±		NS			
Robinson et al. 2020 ⁴⁷			+			
Shams et al. 2020 ⁶⁶			±			
Vincent et al. 2016 ⁷¹	±					
Wheeler et al. 2018 ⁶⁷	+			±		+
Willson et al. 2020 ⁵⁸			NS	+	+	NS
Witry et al. 2020 ⁴⁸		NS		NS		NS
Witry et al. 2020 ⁴⁹		NS				NS
Witry et al. 2020 ⁵⁰			+	+		

(+): Significant improvements; (±): Mixed findings (i.e., significant, and non-significant improvements); NS: non-significant improvements.

in attitudes towards suicide prevention but no significant changes in participants' general perception of suicide post-training.⁴⁵ Moreover, in another study including people with lived experiences of mental disorders in the training program, the impact on participants' attitudes was unclear.⁶⁰ A study conducted by Wheeler et al. reported that a web-based mental health intervention significantly impacted pharmacy staff attitudes towards mental health.⁶⁷ In a study in which an elective MHFA was provided, there was a significant improvement in providers' attitudes and understanding of their impact in supporting patients with mental health disorders.⁴⁷

A study conducted by Bell et al. incorporating consumer educators in the training program reported decreased participants' SDS scores and the perception of stigma towards people with depression and schizophrenia.⁵⁹ Another study using peer-level patient presentations (i.e., the student perceives the presenter as a social status equal to or greater than their own) on schizophrenia and depression also reported a decrease in all SDS scores for schizophrenia.⁴³ A decrease in stigma and a significant improvement in SDS scores were reported in McCormack et al. study in which participants received MHFA training.⁴⁶ Moreover, this study showed significant differences in participants' stigmatizing attitudes in some of the AMIQ items in both the depression and schizophrenia vignettes.⁴⁶ Two studies conducted by O'Reilly et al. reported a significant decrease in SDS scores after a consumer-led teaching intervention and MHFA training.^{64,65} This decrease was maintained at 6-weeks and 12-months post-training in one study.⁶⁴ Significant reductions in mean scores in all the SDS items were reported in participants having direct and indirect contact with mental health patients as part of the training.⁶⁸ One study conducted by Liekens et al. reported significantly lower values in the mean social distance towards people with depression after training but no statistically significant differences compared to the control group.⁷² Significantly less stigma towards people living with depression and schizophrenia was identified following an anti-stigma intervention discussed by Bamgbade et al.⁴² Douglas et al. reported a significant decrease in overall mental health stigma but not in the social distance subcategory.⁵² Similarly, no significant changes were found in the SDS items in two studies.^{56,57}

Attitudes towards mental health counselling or the provision of services were assessed in seven studies,^{41,48,49,54,59,64,72} with five studies reporting significant improvements in participants' attitudes after training.^{41,54,59,64,72} Bamgbade et al. reported an anti-stigma intervention towards people living with depression and schizophrenia whereby participants' willingness to counsel people with schizophrenia significantly increased after the training. However, no significant differences were found in participants' willingness to counsel people with depression.⁴¹ In a study conducted by Bell et al., which incorporated consumer educators, students' attitudes towards the provision of mental services improved differentially with respect to the comparison groups.⁵⁹ Cates et al. reported significant improvements in participants' attitudes towards suicide prevention and the provision of pharmaceutical services in a study in which students participated in a clinical rotation and received prior contact hours of psychiatric therapeutics.⁵⁴ A depression training program was also reported to significantly improve participants' attitudes towards future roles in depression care in a study by Liekens et al.⁷² Lastly, a study reported significant improvements in students' attitudes towards the provision of pharmaceutical services to mental health patients after training that were maintained at 12-month follow-up.⁶⁴

3.5.2. Knowledge

Ten studies^{42,43,45,47,50,56,58,62,65,66} assessed changes in knowledge following training, with 7 of these reporting significant improvements.^{42,43,47,50,62,65,66} The anti-stigma intervention program which focused on schizophrenia and depression showed significant improvements in participants' mental health knowledge.⁴² A study conducted by Witry et al. reported significant improvements in participants' knowledge about suicide prevention and reluctance, especially in the

items related to misconceptions about suicide after training.⁵⁰ A suicide awareness intervention was reported as having a significant impact on students' knowledge about suicide key facts.⁶² One study by Robinson et al. described significant improvements in students' perceptions about their potential impact as mental health providers.⁴⁷ Participants' responses in a case scenario vignette significantly improved following training in another study.⁶⁶ Improvements in participants' perceptions regarding patients with schizophrenia, understanding of the causes of the disease and awareness of the severity of depression were reported by Buhler et al.⁴³ Students' knowledge was described as increased after a suicide prevention intervention.⁵⁸

3.5.3. Confidence and self-efficacy

Ten^{45,50,55–58,60,62,65,67} of 13 studies^{41,45,48,50,55–58,60,62,63,65,67} assessing participants' confidence reported significant improvements. A study conducted by Dean et al. evaluating a mental health education intervention reported significant improvements in participants' self-evaluated confidence and an improvement in comfortability levels.⁵⁵ A similar situation was reported in another study describing an intervention focused on suicide awareness, resulting in a significant increase in participants' confidence and comfort.⁶² Significant improvements in students' self-reported confidence and comfort level to ask about suicide after training were reported.⁵⁸ O'Reilly et al. reported that participants attending the MHFA training were significantly more confident at providing medication counselling and identifying drug-related problems when compared to those who did not attend the training.⁶⁵ Despite this, the results of the self-reported behaviour tool showed that participants were still significantly more confident, comfortable, interested, and likely to provide medication counselling and identify drug-related problems for patients with cardiovascular diseases when compared to those with mental disorders.⁶⁵ Similarly in another study by Boukouvalas et al., participants reported significantly greater confidence in providing counselling services to patients with diabetes than those with depression and schizophrenia.⁴¹ A study involving simulated mental health patient scenarios resulted in significantly improved participants' self-reported confidence.⁶⁰ A study conducted by El-Den et al., reported participants feeling confident about their ability to encourage a person to seek appropriate professional help, offering information and other support as well as asking patients about suicidal thoughts. However, an overestimation of their abilities was found when compared with tutors' evaluation of their skills in a role play.⁶³ A study in which pharmacy students evaluated their self-efficacy in providing mental health assistance reported they felt more confident following MHFA training.⁵⁶ In a study in which student pharmacists were trained as psychiatry medication group leaders, students reported higher overall self-efficacy following the program.⁵⁷ Furthermore, in a study conducted by Witry et al. participants' reported feeling more confidence to apply MHFA to patients with severe depression and anxiety than patients with psychosis, substance abuse and eating disorder.⁵⁰

3.5.4. Skills

Overall, nine studies^{48,49,56,61,63,65,67,69,73} assessed participants' skills and 4 studies reported significant improvements.^{65,67,69,73} Five studies^{48,49,56,61,67} evaluated participants' skills using self-assessment tools. However, in four studies,^{63,65,69,73} participants' skills were rated by an external person (e.g., researcher, mystery shoppers) using tools purposively designed to evaluate their skills. A study conducted by Murphy et al. where participants received training in collaboration with patients, reported significant improvements in intervention group participants' communication and overall quality scores when compared with the control group.⁶⁹ In a study evaluating web-based mental health training, participants self-reported an improvement of their skills after training.⁶⁷ Crocket et al. identified that pharmacists who received depression management training were more likely to initiate conversations with patients on medication side effects, and encouraged patients to talk to their general practitioners, more than those who did not

receive training.⁶¹ In another study describing the delivery of a depression counselling training program, participants' performance was rated using "mystery shoppers" post-training. Trained participants received a significantly higher score in non-verbal communication skills than those in the control group. However, no differences were found in the rapport between groups.⁷³ A study conducted by Frick et al. reported an increase in students' empathy following MHFA training.⁵⁶ Significant improvements in participants' detection of a people with mental disorders were reported in a study by O'Reilly et al.⁶⁵ However, no significant differences were found in participants' ability to recognize specific mental disorders. A study conducted by El-Den et al. in which participants also received MHFA, found that participants overestimated their ability to provide patients with information and access to other support.⁶³

3.6. Assessment of risk of bias

As the methodological quality of studies was appraised using a range of tools depending on study design, the results are reported in two sections: (i) NIH quality assessment evaluating included studies with an uncontrolled pre-post study design, and the (ii) Cochrane EPOC risk of bias assessment evaluating included studies with a controlled (randomized and non-randomized) study design.

3.7. Risk of bias - NIH quality assessment

Of the 22 studies analysed, the overall methodological quality in 73% (n=16) of the uncontrolled pre-post studies was rated as 'fair'.^{41–49,52,54,55,66,67,71} The issues presented in these studies were mainly concerning small sample size, participants representativeness of the target population (i.e., the population of interest), lack of enrolment of eligible participants, lack of information provided regarding the loss of participants to follow-up and the absence of repeated measures of outcomes. All studies clearly described the objectives, interventions, outcomes, and statistical analysis, and only two studies did not present p-values in their analysis. The quality of 19% of studies (n=4)^{50,56,63,64} was rated as 'good', representing low risk of bias as the main issue was mostly concerning the lack of repeated measures of outcomes. Nine percent of studies were rated 'poor'. This rating typically resulted from unclear description, small sample size, or otherwise high risk of bias (Fig. 2).

3.8. Risk of bias - EPOC assessment

Of the 11 studies analysed, the overall methodological quality in controlled trials was rated as high in 36% of evaluated studies (n=4)^{60,68,70,72}, with 36% rated as medium (n=4)^{53,59,65,73} and 27% as low quality (n=3).^{51,61,69} The domains more frequently rated as high risk of bias among studies were 'random sequence generation' (64%, n=7),

'allocation concealment' (64%, n=7) and 'blinding of outcome assessment' (36%, n=4). The domains most frequently considered as low risk of bias were 'protection against contamination' (91%, n=10) and 'selective reporting' (91%, n=10). Three studies presented high risk of bias in other domains such as differences between sample size in intervention and control groups, lack of description of baseline characteristics and p-values. The risk of bias in these studies is illustrated in Fig. 3. A detailed risk of bias assessment of included studies is summarized in Supplementary file 3.

4. Discussion

This systematic review has synthesized evidence from 33 studies evaluating the effectiveness of mental health training programs delivered to pharmacy personnel, with a specific focus on community pharmacy. A range of mental health training programs have been identified including the standard MHFA training which was the most commonly received by participants in the included studies. Most training programs were focused on mental health disorders in general, or for specific condition such as depression and schizophrenia. A combination of knowledge-based and active learning components was identified in most training programs. Multicomponent training programs provided in different modalities (e.g., face-to-face, online), targeted to enhance pharmacist, student or staff ability to deliver mental health care have demonstrated improvements in outcomes including pharmacists' knowledge, confidence and attitudes.

The provision of mental health training to healthcare professionals has been reported as a key step to improving the quality of service delivery in mental health care.⁷⁸ Community pharmacists play a vital role in the early detection and ongoing management of patients living with mental health disorders. This role may be particularly crucial for rural and remote areas where access to other primary or secondary care services may be limited. As such, it reiterates the importance of training for pharmacy teams particularly in areas where access to health care may be limited.

The inclusion of mental health training during university, for pharmacy students together with students from other health disciplines, has been previously reported as positively impacting students' confidence^{79–81} and positively impact their behaviours, understanding of the significance of multidisciplinary care in mental health and enhancing collaboration.^{82–84} Consideration should be placed on delivering mental health training programs to multidisciplinary teams and better understanding the roles of primary care providers in mental health care delivery. This may promote collaboration with other primary care providers in mental health and better facilitate the integration of community pharmacy in primary care.

The addition of active learning components in training, such as role-playing, has been previously identified to enhance participants' reflection and insight, self-efficacy, and empathy in mental health practice.⁸⁵

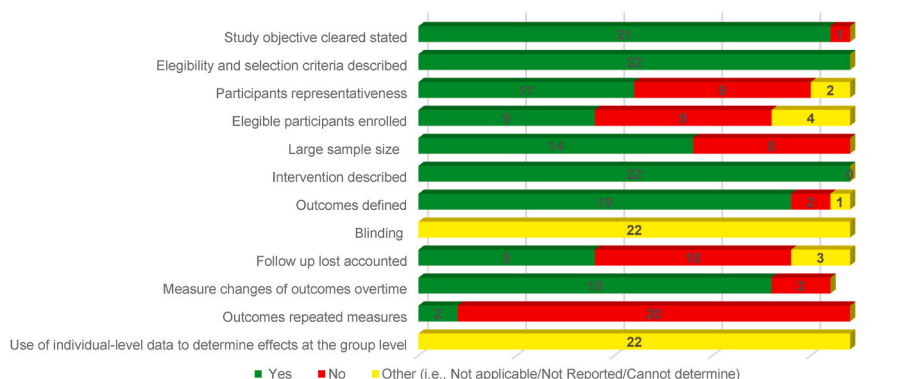


Fig. 2. NIH Quality assessment for studies with No Control Group (n = 22).

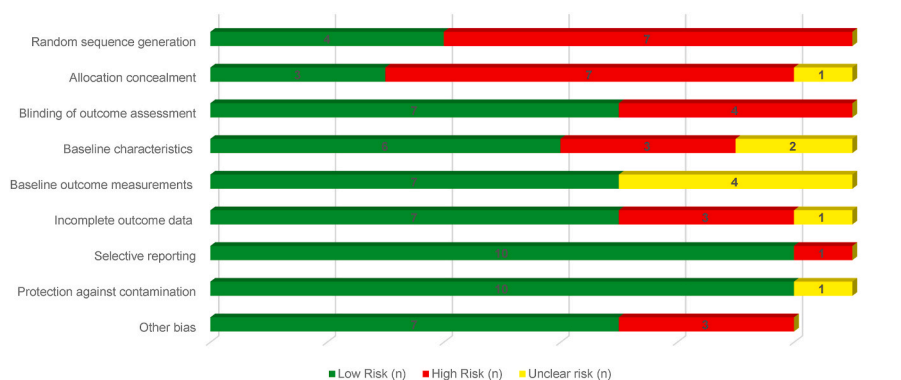


Fig. 3. EPOC Risk of bias for studies with a separate control group (n = 11).

Thus, should be considered when developing or revising existing mental health training programs. The inclusion of consumer educators has been found to help students reflect on how they could relate to people living with mental health disorders both personally and professionally.⁸⁶ The inclusion of consumers during training may assist participants (that is, pharmacists, students and staff) to recognize the signs and symptoms of mental health disorders through early identification, reduce participants' stigma and increase awareness of the importance of supporting people experiencing these conditions.

Changes in participants' attitudes, skills, stigma, knowledge and confidence were the most common outcomes evaluated in the studies, however there was large heterogeneity in the outcomes, scales and instruments used to assess these outcomes. These results align with those reported by Caulfield et al.,³² who published a systematic review of mental health training for non-specialist health workers and reported inconsistency in methods, timing, and outcomes for evaluation. Future research should identify the most efficient instruments to measure a set of standardized outcomes for these mental health training programs, and more specifically in pharmacy.

Self-assessment instruments to evaluate participants' confidence, self-efficacy and performance were commonly identified. A systematic review by El-Den et al., which explored the delivery and assessment of MHFA to university students, similarly reported that most studies used self-assessment tools.³⁰ While important, combining self-reported and observational assessment tools to compare results may be critical to ensure the reliability and validity of outcomes.

Significant improvements in participants' attitudes, stigma, knowledge and confidence were reported in some studies. However, this was largely based on evaluation at a single time-point following the training in most of the studies. This result is in line with a meta-analysis reported by Morgan et al.²⁹ in which the authors report that only two studies evaluated the effect of training after 6 months. Further consideration should be placed on assessing the impact of training programs at multiple time points, to ensure outcomes are sustained.

Community mental health stigma is a significant barrier that prevents patients from seeking help,^{87,88} which directly impacts healthcare providers' willingness to provide help.^{89,90} A recently published article proposed strategies (e.g., designing visible structures and processes for normalizing help seeking and encouraging easy access to care) to reduce health provider stigma around mental health.⁹¹ Studying and proposing new strategies to help reduce pharmacists' stigma through training may be necessary to ensure their impact in mental health care delivery is optimized.

Mental health training was found to positively impact pharmacists' empathy, verbal and non-verbal communication skills. These results are promising as the relevance of improving soft skills to enhance relationships has been previously highlighted in the literature. Specifically, a study by Vogel et al.⁹² highlighted the importance of training in verbal and non-verbal communication behaviours during

undergraduate courses to raise student awareness and improve their relationship with patients.⁹² Ruben et al.⁹³ also highlight the importance of effective patient-centred communication skills (verbal and non-verbal communication) to enhance engagement with people living with mental disorders. Furthermore, training in patient-centred communication behaviours was also encouraged by the authors in another study.⁹⁴

4.1. Strengths and limitations

The results present a detailed description of the components of mental health training programs, outcomes among pharmacists, students and staff, and instruments used to evaluate these programs. Studies were included regardless of study design, as the objective was to summarize all evidence available in the area. There was significant variability in the sample size of included studies and it is recommended that this be considered together with the risk of bias assessment when determining the overall effectiveness of training programs. Despite this, the strength of this approach, is that a meaningful number of studies describing and assessing mental health training programs have been included. As the aim of this systematic review was to gather information about the impact of mental health training programs, studies assessing the training program using quantitative methods were our target. However, as many studies used tools to evaluate the training combining both quantitative and qualitative methods, the authors considered that including these studies was necessary to provide a complete overview of published literature, as not reporting all the results could lead to bias in the interpretation of results.

5. Conclusion

Mental health and mental health care delivery is increasingly becoming a key priority for community pharmacists and their teams. This systematic review highlights the importance of mental health training programs in increasing pharmacists' skills and readiness to provide mental health support. Future research should build upon this basis and further focus on finding the most efficient measures to evaluate these training programs and assessing their long-term effectiveness. This will enable standardisation of outcomes reported and comparison across the different training programs provided. Furthermore, additional research could specifically focus on evaluating the impact of mental health training programs on patient outcomes. Critically, these results could stimulate informed discussion regarding the role of community pharmacists and their teams in the early identification, management and referral of mental health disorders while highlighting the training requirements to increasingly deliver quality mental health services to their communities.

Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.sapharm.2022.06.006>.

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