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Mental Health First Aid as a tool for improving mental health and well-being (Review)

Richardson R, Dale HE, Robertson L, Meader N, Wellby G, McMillan D, Churchill R

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[Intervention Review]

Mental Health First Aid as a tool for improving mental health and well-being

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ABSTRACT

Background

The prevalence of mental health problems is high, and they have a wide-ranging and deleterious effect on many sectors in society. As well as the impact on individuals and families, mental health problems in the workplace negatively affect productivity. One of the factors that may exacerbate the impact of mental health problems is a lack of 'mental health literacy' in the general population. This has been defined as 'knowledge and beliefs about mental disorders, which aid their recognition, management, or prevention'.

Mental Health First Aid (MHFA) is a brief training programme developed in Australia in 2000; its aim is to improve mental health literacy and teach mental health first aid strategies. The course has been adapted for various contexts, but essentially covers the symptoms of various mental health disorders, along with associated mental health crisis situations. The programmes also teach trainees how to provide immediate help to people experiencing mental health difficulties, as well as how to signpost to professional services. It is theorised that improved knowledge will encourage the trainees to provide support, and encourage people to actively seek help, thereby leading to improvements in mental health.

This review focuses on the effects of MHFA on the mental health and mental well-being of individuals and communities in which MHFA training has been provided. We also examine the impact on mental health literacy. This information is essential for decision-makers considering the role of MHFA training in their organisations.

Objectives

To examine mental health and well-being, mental health service usage, and adverse effects of MHFA training on individuals in the communities in which MHFA training is delivered.

Search methods

We developed a sensitive search strategy to identify randomised controlled trials (RCTs) of MHFA training. This approach used bibliographic databases searching, using a search strategy developed for Ovid MEDLINE (1946 -), and translated across to Ovid Embase (1974 -), Ovid PsycINFO (1967 -), the Cochrane Central Register of Controlled Trials (CENTRAL) and the Cochrane Common Mental Disorders Group's Specialised Register (CCMDCTR). We also searched online clinical trial registries (ClinicalTrials.gov and WHO ICTRP), grey literature and reference lists of included studies, and contacted researchers in the field to identify additional and ongoing studies. Searches are current to 13th June 2023.

Selection criteria

We included RCTs and cluster-RCTs comparing any type of MHFA-trademarked course to no intervention, active or attention control (such as first aid courses), waiting list control, or alternative mental health literacy interventions. Participants were individuals in the communities in which MHFA training is delivered and MHFA trainees. Primary outcomes included mental health and well-being of individuals, mental health service usage and adverse effects of MHFA training. Secondary outcomes related to individuals, MHFA trainees, and communities or organisations in which MHFA training has been delivered

Data collection and analysis

We used standard Cochrane methods. We analysed categorical outcomes as risk ratios (RRs) and odds ratios (ORs), and continuous outcomes as mean differences (MDs) or standardised mean differences (SMDs), with 95% confidence intervals (CIs). We pooled data using a random-effects model. Two review authors independently assessed the key results using the Risk of Bias 2 tool and applied the GRADE criteria to assess the certainty of evidence

Main results

Twenty-one studies involving a total of 22,604 participants were included in the review. Fifteen studies compared MHFA training with no intervention/waiting list, two studies compared MHFA training with an alternative mental health literacy intervention, and four studies compared MHFA training with an active or an attention control intervention. Our primary time point was between six and 12 months.

When MHFA training was compared with no intervention, it may have little to no effect on the mental health of individuals at six to 12 months, but the evidence is very uncertain (OR 0.88, 95% CI 0.61 to 1.28; 3 studies; 3939 participants). We judged all the results that contributed to this outcome as being at high risk of bias. No study measured mental health service usage at six to 12 months. We did not find published data on adverse effects.

Only one study with usable data compared MHFA training with an alternative mental health literacy intervention. The study did not measure outcomes in individuals in the community. It also did not measure outcomes at our primary time point of six to 12 months.

Four studies with usable data compared MHFA training to an active or attention control. None of the studies measured outcomes at our primary time point of six to 12 months.

Authors' conclusions

We cannot draw conclusions about the effects of MHFA training on our primary outcomes due to the lack of good quality evidence. This is the case whether it is compared to no intervention, to an alternative mental health literacy intervention, or to an active control. Studies are at high risk of bias and often not sufficiently large to be able to detect differences.

PLAIN LANGUAGE SUMMARY

Mental Health First Aid as a tool for improving mental health and well-being

Why was this review important?

Mental health first aid is defined as 'the help provided to a person who is developing a mental health problem, experiencing a worsening of a mental health problem, or is in a mental health crisis' The first aid is given until appropriate professional help is received or the crisis resolves.' Mental Health First Aid (MHFA) is a training programme that aims to teach mental health first-aid strategies to members of the public. MHFA training works in a cascade model; accredited instructors deliver training to equip trainees with mental health first aid skills. Once trained, a trainee offers mental health first aid to people within their workplace, organisation, or community. MHFA training is designed to increase knowledge about mental health problems, and thereby reduce stigma often attached to these. Trainees learn how to provide immediate help to recipients and how to signpost to services.

Who will be interested in this review?

Individuals considering MHFA training

Employees and employers

Policy and decision-makers

What questions did this review try to answer?

What is the impact of Mental Health First Aid (MHFA) training on mental health and well-being, mental health service usage, and adverse effects in individuals within the community in which MHFA training is delivered?

Which studies were included in the review?

We searched for randomised controlled trials (clinical studies where people are randomly put into one of two or more treatment groups) that examined MHFA training published up to June 2023.

We included 21 studies with 22,604 participants.

What did the evidence from the review tell us?

The main outcome of interest was the effect of MHFA training on the mental health and well-being of individuals at a time point between six months and a year. We included three comparisons: MHFA versus no intervention; MHFA versus an alternative intervention designed to improve mental health literacy; and MHFA versus an active control, for example training in physical first aid. We only found very low-certainty evidence regarding this outcome, and it is not possible to draw any firm conclusions. The evidence we found only related to our comparison of MHFA with no intervention. We did not find any evidence relating to mental health service usage or adverse effects at the same time point.

What are the limitations of the evidence?

We are not confident in the evidence, firstly because there were problems in the way in which the research had been carried out which might bias their results. Secondly, there were variations in the results from different studies that we could not explain. Thirdly, because many studies did not include large number of participants, we were not able to obtain precise results that would tell us whether MHFA training was better than the interventions to which it was compared. The lack of evidence around adverse effects is a limitation, as we cannot assume that any type of intervention does not have the potential to cause harm.

What should happen next

Further research is needed to better understand the possible effects of MHFA.

SUMMARY OF FINDINGS

Summary of findings 1. Summary of findings table - Mental Health First Aid (MHFA) training compared to control for improving mental health and wellbeing

Mental Health First Aid (MHFA) training compared to control for improving mental health and wellbeing

Patient or population: improving mental health and wellbeing
Setting: Various settings
Intervention: Mental Health First Aid (MHFA) training
Comparison: control

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with Mental Health First Aid (MHFA) training				
Individual mental health assessed with: Various mental health scales follow-up: range 6 months to 1 years	80 per 1000	**72 per 1000** (51 to 101)	**OR 0.88** (0.61 to 1.28)	3939 (3 RCTs)	⊕⊖⊖⊖ Very low[a,b,c]	The evidence is very uncertain about the effects of MHFA training on this outcome. We calculated the absolute risk in the control group from the two studies that reported an OR, by calculating the median risk of the groups in these studies.
Mental health service usage - not measured	-	-	-	-	-	
Adverse effects of MHFA - not measured	-	-	-	-	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **OR:** odds ratio

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_427172096978410960.

[a] This result has been downgraded twice for a very serious risk of bias. All the studies contributing data were at an overall high risk of bias, and had a high risk of bias in several domains.
[b] This result has been downgraded once for serious unexplained heterogeneity. The I squared value is 62%
[c] This result has been downgraded once for serious imprecision. The wide confidence intervals crossed the line of no effect, meaning that MHFA could have a benefit, or be harmful in terms of individual mental health.

Summary of findings 2. Summary of findings table - Mental Health First Aid (MHFA) training compared to alternative mental health literacy interventions for improving mental health and wellbeing

Mental Health First Aid (MHFA) training compared to alternative mental health literacy interventions for improving mental health and wellbeing

Patient or population: improving mental health and wellbeing
Setting: Various settings
Intervention: Mental Health First Aid (MHFA) training
Comparison: alternative mental health literacy interventions

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with alternative mental health literacy interventions	Risk with Mental Health First Aid (MHFA) training				
Individual mental health - not measured	-	-	-	-	-	
Mental health service usage - not measured	-	-	-	-	-	
Adverse effects of MHFA - not measured	-	-	-	-	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_427225736603801662.

Summary of findings 3. Summary of findings table - Mental Health First Aid (MHFA) training compared to alternative intervention for improving mental health and wellbeing

Mental Health First Aid (MHFA) training compared to alternative intervention for improving mental health and wellbeing

Patient or population: improving mental health and wellbeing
Setting: Various settings
Intervention: Mental Health First Aid (MHFA) training
Comparison: alternative intervention

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with alternative intervention	Risk with Mental Health First Aid (MHFA) training				
Individual mental health - not measured	-	-	-	-	-	Not measured at 6 month - 1 year timepoint
Mental health service usage - not measured	-	-	-	-	-	Not measured in any study
Adverse effects of MHFA - not measured	-	-	-	-	-	Not measured at 6 month - 1 year timepoint

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **RR:** risk ratio

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
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See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_427225754564859969.

BACKGROUND

Description of the condition

According to the most recent Adult Psychiatric Morbidity Survey, around one in six adults in England meets the criteria for a common mental disorder, which include different types of anxiety disorder and depression. Yet, of adults between the ages of 16 to 74 with these conditions, only 37% were accessing mental health treatment (McManus 2016). A similar pattern is seen worldwide; according to the 2015 Global Burden of Disease study, depression ranks as the third most common cause of years lived with disability worldwide, with anxiety disorders at ninth, and schizophrenia at twelfth (Vos 2016). In 2020, the World Health Organization (WHO) estimated that service coverage for psychosis was estimated at 29% using 12-month service utilization data collected for the Mental Health Atlas 2020. Service coverage for depression was estimated at 40% using the World Mental Health Surveys (World Health Organization 2021). Improving early identification of mental health problems and access to treatment is a global health priority.

Mental health problems have a wide-ranging and deleterious effect on many sectors in society. A negative impact on productivity in the workplace is one major aspect. In the UK, for example, an estimated 15.8 million days were lost to sickness absence due to mental health issues (including stress, depression, anxiety, and more serious conditions, e.g. manic depression and schizophrenia) in 2016 (Office for National Statistics 2017). This was the fourth most common reason for sickness absence, accounting for 11.5% of all days lost. Global estimates suggest that across the 36 largest countries in the world, more than 12 billion days of lost productivity are attributable to depression and anxiety disorders every year, at an estimated cost of USD 925 billion (Chisholm 2016). There is evidence that some groups of workers are at higher risk of experiencing mental health problems: in 2022, the World Health Organization noted that, "some workers, such as health, humanitarian or emergency workers, are more likely to be exposed to adverse experiences at work. This is partly because of the nature of their work (for example, exposure to potentially traumatic events) but also because of the way their job may be designed (for example, high workload, long hours, shift work or work at unsociable hours). This adversity puts workers at risk of negative impacts to their mental health"(World Health Organization 2022).

The impact of mental health problems amongst younger people is significant. It is estimated that one in seven young people aged 10 to 19 years old experiences a mental disorder globally, Failure to address these problems can lead to problems persisting into adulthood (World Health Organization 2023). In 2019, suicide was the fourth most common cause of death for adolescents aged 15 to 19, with a death rate of six per 100,000 (UNICEF 2021).

One of the factors that may exacerbate the impact of mental health problems is a lack of mental health literacy in the general population. The term 'mental health literacy' is defined as 'knowledge and beliefs about mental disorders, which aid their recognition, management, or prevention'. The term originated from surveys of Australian adults, which showed that when given vignettes of characters suffering from depression or schizophrenia, most members of the public could not correctly label the disorder, and their recommendations regarding treatments often deviated from standard professional opinion (Jorm 1997). Since then, multiple studies, in different countries, using similar vignettes, have confirmed that the public are generally poor at recognising common mental health conditions, particularly those other than depression; that their beliefs about helping strategies often diverge significantly from the opinion of medical professionals, particularly regarding medication and psychiatric treatment; and that there is widespread stigmatisation of mental illness, particularly schizophrenia (Angermeyer 2006; Jorm 2000; Jorm 2012).

Lack of mental health literacy amongst the population acts as a barrier to seeking help in several ways. On an individual level, a person may be unaware that they are suffering from a mental health problem that is treatable, or they may not know where and how to access treatment. In addition, stigma around mental health problems has been shown to be associated with an unwillingness to seek help (Barney 2006; Stuart 2004; Thornicroft 2008), as well as poorer treatment adherence (DosReis 2009; Sirey 2001; Sirey 2001a). Conversely, it has also been demonstrated that improved mental health literacy is associated with greater intentions to seek help, and more willingness to disclose mental health problems (Rüsch 2011; Suka 2016).

There is evidence that seeking help for mental health is influenced by an individual's social network; people appear more likely to seek professional help if someone else suggests it (Cusack 2004: Wong 2014), and this is influenced by the mental health literacy of their social network. Amongst college students, being prompted to seek help has been found to be related to more positive attitudes towards help-seeking behaviour (Vogel 2007). There is also evidence that people are likely to seek help from their social network: in a study of people who had attempted suicide, Barnes 2002 found that friends and family were the people from whom help was sought most frequently in the previous month. Young people who seek help for mental health problems are more likely to reach out to friends and family first (Rickwood 2007). Thus, the level of mental health literacy across a social network community may be important in influencing help-seeking.

Description of the intervention

Mental Health First Aid (MHFA) is a training programme developed in Australia in 2000; its aim is to teach mental health first aid strategies to members of the public. Mental Health First Aid is defined as the 'help provided to a person who is developing a mental health problem, experiencing a worsening of a mental health problem, or is in a mental health crisis'. The first aid is given until appropriate professional help is received or the crisis resolves' (MHFA Australia 2018a).

The MHFA model involves the training of instructors who are then approved to teach the MHFA course to others. Once trained by an accredited MHFA instructor, an individual is deemed to have the skills necessary to offer mental health first aid to people within their workplace, organisation, or wider community. The MHFA curriculum is based on best practice guidelines, which were derived from expert consensus via the Delphi method. The course covers the symptoms and risk factors in depressive, anxiety, psychotic and substance use disorders, along with associated mental health crisis situations including suicidality, panic attacks, traumatic experiences, threatening behaviour, and drug overdose. Providing help is centred on a five-step action plan, and appropriate ways of applying this to each mental health problem are practised during the course (Kitchener 2008). The acronym for this action

plan is 'ALGEE' which stands for 'Approach, assess, and assist with any crisis; Listen and communicate non-judgementally; Give support and information; Encourage appropriate professional help; Encourage appropriate supports'. This plan is adapted, depending on the actual mental health problem being addressed.

The 'standard' course delivered under the aegis of MHFA Australia lasts for 12 hours, and is delivered face-to-face (MHFA Australia 2018b). It is aimed at people who are aged 18 and over, who are offering initial support to adults in communities and workplaces. However, there are many different courses now being delivered, including those aimed at adults helping adolescents, those aimed at adults helping an older person, and those aimed at particular cultural groups, for example, Aboriginal and Torres Strait Islander people (Kitchener 2008). The course content is adapted to meet the different needs of specific groups. MHFA courses have also been translated into different languages, and adapted to meet the needs of different countries. Courses are now offered in over 20 different countries, including the USA, Pakistan, and Sweden. Prices for MHFA courses vary, depending on the type of course, and many are subsidised by government bodies. The MHFA Australia website gives the cost of a face-to-face course as AUD100 to AUD300 per person (MHFA Australia 2018c).

How the intervention might work

The MHFA intervention works in a 'cascade' model; individuals trained to become accredited MHFA instructors deliver training courses designed to equip the trainees with mental health first aid skills. MHFA training programmes are designed to increase knowledge about common mental health problems, and thereby to reduce the stigma often attached to such disorders. The programmes also teach trainees how to provide immediate help to people experiencing mental health difficulties, as well as how to signpost to professional services (MHFA Australia 2023). It is theorised that improved knowledge will encourage the trainees to provide support, and encourage people to actively seek help, thereby leading to improvements in mental health (MHFA International 2023a).

Why it is important to do this review

For a variety of reasons, concerns about the widespread adoption of MHFA training with little formal evaluation have been raised. Over 5,000,000 people have been trained in MHFA worldwide, and the program is being delivered in 24 countries (MHFA International 2023b). This review has been designed to summarise the evidence base that could help address these concerns. First, it is important to note that other mental health literacy programmes are available and that MHFA training may need to be evaluated in the context of these programmes. Second, the 'cascade' approach taken in MHFA has implications for its evaluation. Whilst there may be positive effects for recipients of the training in terms of their knowledge about and attitudes towards mental health problems, it is important that the actual impact of the intervention is evaluated for the recipients of their intervention (who may have mental health problems) in terms of their own knowledge, attitudes and mental health and well-being outcomes. Third, there is a cost associated with the implementation of MHFA (for example, the costs of the programme and the training, as well as the time committed by the trainees engaging with people who may be in psychological distress), and it is important that evidence about all potential impacts of the intervention are assessed. Fourth, the success of MHFA is partly dependent on access to appropriate professional support, which may not always be available in areas where the intervention is implemented; concerns have also been raised that, in the absence of readily accessible support, being encouraged to seek help and subsequently being turned down could lead to worse outcomes for the individual (Watts 2017).

Hadlaczky and colleagues performed a meta-analysis on all existing randomised and non-randomised studies (Hadlaczky 2014). The authors found moderate to small effects of MHFA training on knowledge, attitudes, and helping behaviours in trainees. Since this, there have been several new randomised controlled trials (RCTs) examining MHFA training, and much debate has taken place about what evidence is needed in this area to inform decision-making. This review is being undertaken in the context of a wider research programme to explore these issues with a variety of stakeholder groups. While we have been developing this research programme, another review and meta-analysis has been published that includes both randomised and non-randomised controlled trials (Morgan 2018). We are also aware that much of the research evidence on the effects of MHFA training consists of qualitative studies and studies with no control group (Crooks 2018; El-Den 2016; Gryglewicz 2018). Our review, while comprehensive, is limited to RCTs, and focuses on the effects of MHFA training on the mental health and mental well-being of all recipients, be they MHFA trainees, individuals in the wider community, or organisations. This information is essential for decision-makers considering the role of MHFA training in their organisations.

OBJECTIVES

Our primary objective is to examine mental health and well-being, mental health service usage, and adverse effects of Mental Health First Aid (MHFA) training on individuals in the communities in which MHFA training is delivered.

We have three secondary objectives.

1. To examine the effects of MHFA training on individuals in the community, in terms of their knowledge about mental health and attitudes towards mental health problems.

2. To examine the effects of MHFA training on trainees' knowledge about mental health, attitudes towards mental health problems, number of encounters with people with mental health problems, and their own mental health and well-being.

3. To examine the effects on organisations, looking at measures of absenteeism and productivity at work.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled trials (RCTs), including cluster-RCTs in this review. We also planned to include quasi-randomised trials, had we found these during our searches. We were aware of non-randomised trials of MHFA training, but anticipated that there would be considerable data available from RCTs, which proved to be the case. We restricted our review to RCTs, as RCTs are the most rigorous design for determining the effectiveness of interventions

and minimising the risk of bias. Cross-over RCTs were not eligible for our review, due to the nature of the intervention.

We planned to include trials published in any language, provided a suitable translation could be obtained. In the case of ongoing trials, we contacted study authors to see if preliminary data were available. We also planned to include unpublished trials.

Types of participants

Participant characteristics

Recipients of MHFA training (trainees), individuals in the wider community (individuals), and organisations. We included people of any age and any population, including minority and disadvantaged groups, and underserved populations, such as older people.

If studies included data on multiple populations, we planned to disaggregate the data for relevant populations.

Setting

We placed no restrictions on setting. We included studies undertaken in any type of organisation, including schools, higher education facilities, other types of workplaces, and other organisations, such as community groups. We considered the impact of the setting of the intervention in the subgroup analyses, when there were sufficient data to do this, and we took account of the potential role of the setting (for example, whether large or small, or the likely prevalence of mental health problems) in interpreting our findings.

Types of interventions

Experimental Intervention

- Any type of MHFA-trademarked course, derived from the official MHFA programme designed to train people to deliver MHFA. We included MHFA training that had been adapted for, or tailored to, the needs of specific or underserved populations (including young people, older people, specific professional groups, and minority ethnic populations). We included traditional face-to-face courses, and those delivered via reading materials or digital media. We included studies where MHFA training had been delivered as part of a multifaceted, or more complex, mental health and well-being programme.

Comparator intervention

- No intervention or wait-list control
- Alternative mental health literacy interventions distinct from MHFA
- Active or attention controls such as physical first aid courses. We called these 'alternative interventions'

We did not include comparisons of different adaptations of MHFA training.

Types of outcome measures

We planned to include studies regardless of whether they reported the outcomes listed below.

Primary outcomes

Our primary outcomes related to individuals in the wider community, and were as follows.

- Mental health and well-being, measured by a validated measure, for example the Strengths and Difficulties Questionnaire (SDQ).
- Mental health service usage, measured by objective service records. These may include clinic records, referrals to healthcare professionals, or the costs of service usage.
- Adverse effects of MHFA, for example, documented instances of inappropriate advice, delays in receiving treatment, and inappropriate service usage.

Secondary outcomes

Our secondary outcomes related to individuals in the wider community, MHFA trainees, and organisations in which MHFA training has been delivered (data for each of these groups will be analysed separately). They included the following.

- Knowledge about mental health problems. Measures had to be based on information about mental health problems, and been validated, for example, by consultation with mental health professionals.
- Stigmatising attitudes towards mental health problems, assessed by a validated social distance or stigma scale.
- Self-reported contacts, or help provided to people with a mental health problem, since training.
- Mental health and well-being of trainees and organisations, using a validated measure.
- Absenteeism across an organisation, however measured.
- Productivity across an organisation, however measured.
- Cost-effectiveness of providing the intervention.

Timing of outcome assessment

We were interested in outcomes immediately post-MHFA course, and at follow-up at less than six months, between six months and a year, and more than one year. If outcomes were measured at multiple time points within each window, we planned to extract the latest recorded observations, as this best represented the longevity of the intervention's effects. Outcomes measured at six months to a year were treated as the primary time point for the summary of findings tables, as we believe that this represents the best balance between assessing whether MHFA training has produced any lasting changes in trainees, and allowing time for its impact to be felt amongst individuals in the wider community.

Hierarchy of outcome measures

Where outcomes had been measured in several ways, we gave priority to the one that was most frequently used among the included trials. If multiple scales were used to measure the same construct, we combined data using appropriate statistical techniques, as discussed below.

Search methods for identification of studies

We developed a sensitive search strategy to identify randomised controlled trials (RCTs) (Lefebvre 2020). This approach used bibliographic databases searching, using a search strategy developed for MEDLINE Ovid (Appendix 1), and it included the use of supplementary search methods, as set out below.

Electronic searches

Information Specialists within the Centre for Reviews and Dissemination (CRD) and the Cochrane Common Mental Disorders

Group in York, searched the following electronic databases to 13 June 2023.

- Cochrane Common Mental Disorders Controlled Trials Register (CCMDCTR) (all available years);
- Cochrane Central Register of Controlled Trials (CENTRAL; 2023, Issue 5) in the Cochrane Library (searched 13 June 2023);
- MEDLINE Ovid (1946 to 13 June 2023);
- Embase Ovid (1946 to 13 June 2023);
- PsycInfo Ovid (1946 to 13 June 2023);
- PubMed (not MEDLINE), (1946 to 13 June 2023).

The Information Specialists did not apply any restrictions on study design, date, language, or publication status to the searches (unless otherwise stated). Update searches of bibliographic databases (from 2019 onwards) were limited to randomised trials. The search strategies are displayed in Appendix 1.

Searching other resources

Trials registers

We searched the following trials registers for ongoing, unpublished/completed trials (to 13 June 2023).

- The World Health Organization's trials portal (ICTRP);
- ClinicalTrials.gov (ClinicalTrials.gov).

Conference proceedings

We searched the Web of Science (Calvairate Analytics) Conference Proceedings Citation Index-Science (CPCI-S) and Social Science & Humanities (CPCI-SSH), (1990 to 13 June 2023).

Conference abstracts were also captured via searches of Embase and the Cochrane Central Register of Controlled Trials.

Other sources of grey literature

We searched for theses and dissertations via

- Dissertations & Theses Global (ProQuest), (all years to 24 May 2022);
- Dissertations & Theses: UK and Ireland (ProQuest), (all years to 24 May 2022);
- Britsh Library e-theses online (EThOS), (all years to 29 January 2019);
- Open Access Theses Database (OATD), (all years to 29 January 2019).
- Open Grey http://www.opengrey.eu/ (to 2017 only).

Theses were also captured via PsycInfo

We also ran a search of the Internet using similar search terms to those used in the MEDLINE search strategy. We used Google's advanced search feature.

Reference lists

We checked the reference lists of all included studies and relevant systematic reviews to identify additional studies missed from the original electronic searches (for example, unpublished or in-press citations).

Correspondence

We contacted trialists and subject experts for information on unpublished or ongoing studies, or to request additional trial or study data, as applicable.

Data collection and analysis

Selection of studies

Three members of the review team (RR, HD, LR) independently screened the titles and abstracts of reports obtained through the searches, and established whether studies were potentially relevant or not. They discarded records deemed obviously not eligible, and retrieved full copies of potentially relevant papers. They resolved disagreements by discussion; if consensus could not be reached, they retrieved the full text for further scrutiny. Three review authors (RR, HD, LR) then independently reviewed the full text of these studies, and decided whether they met the inclusion criteria. The review authors resolved any disagreement by discussion with a fourth member of the team (RC) until a consensus was reached. If a consensus could not be reached, we planned to attempt to contact study authors to obtain further information, but this was not necessary. We documented and summarised reasons for excluding studies at the full-text stage in a Characteristics of excluded studies table, and illustrated the process of the literature search and study selection in a PRISMA flow diagram (Figure 1) (Higgins 2011a).

Figure 1. Study flow diagram

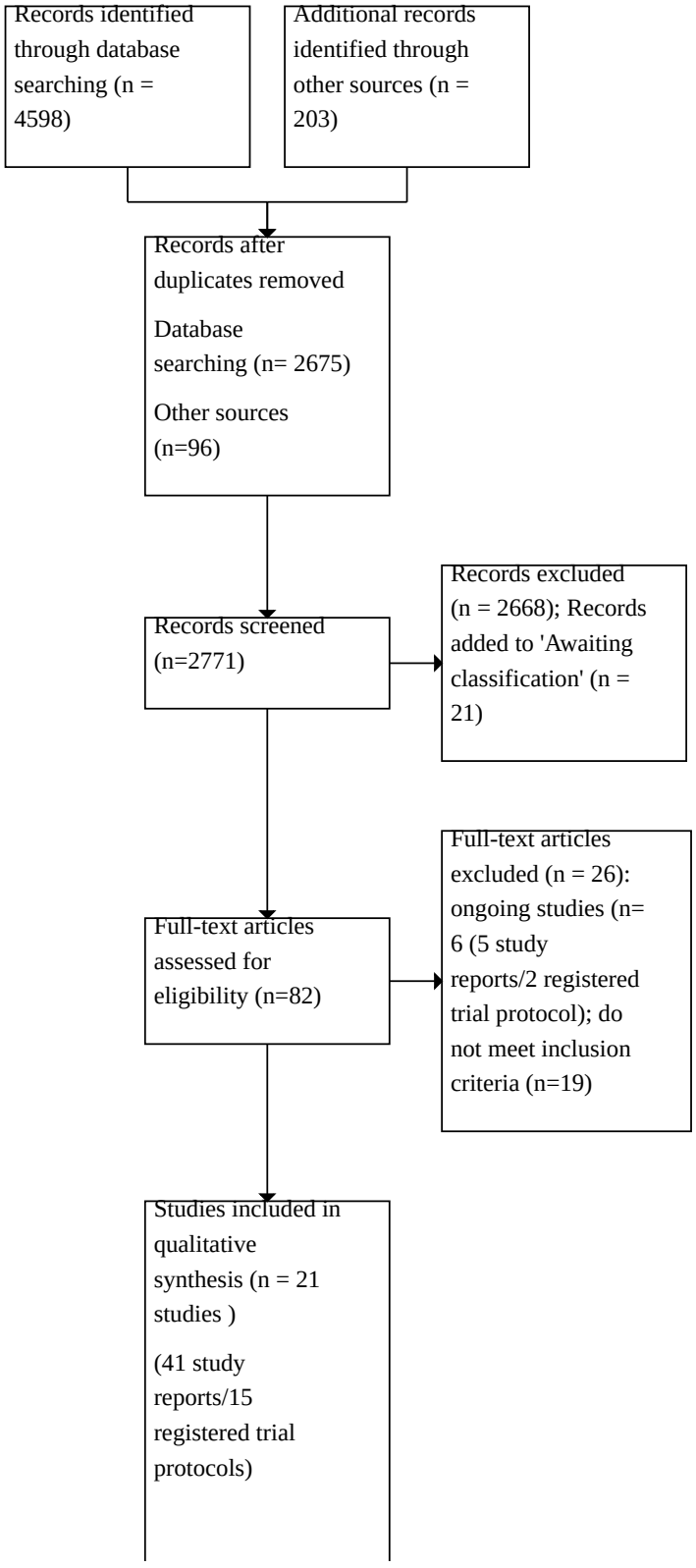
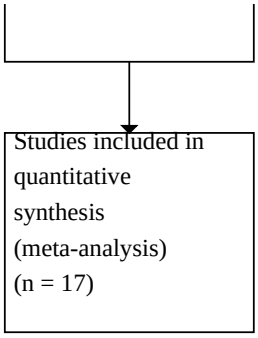


Figure 1. (Continued)



Data extraction and management

Three review authors (RR, HD, LR) extracted data from selected studies, using specifically designed template forms piloted on at least one study in the review, and revised as necessary. We extracted and checked data independently. As well as data regarding outcomes of interest, other information extracted included study design, population, size, type of MHFA training and duration, type of comparator intervention, length of follow-up, and statistical methods used. We also extracted source of funding, any reported conflicts of interest, and if the researchers had any allegiances to developers of the interventions. We made a note of any outcomes that were reported in the studies, but which we did not extract. We noted studies that met our inclusion criteria but contained no outcome data relevant to the review in the Characteristics of included studies table. We resolved any disagreements by discussion with another review author (RC). One review author (RR) transferred the extracted data into Review Manager 5, the Cochrane Review software, for analysis (Higgins 2011a; Review Manager 2014).

Main planned comparisons

- MHFA training versus no intervention (including waiting list controls).
- MHFA training versus alternative mental health literacy education interventions.
- MHFA training versus active or attention control.

Assessment of risk of bias in included studies

We assessed the risk of bias in included studies using Cochrane's revised tool (RoB 2.0; Higgins 2016). One review author (RR) independently assessed the risk of bias, and a second review author checked the assessments. The two review authors resolved disagreements by discussion. There was no need to consult with a third review author over any disagreements. We conducted a results-based assessment, examining the risk of bias individually for each result included in the meta-analyses. We assessed the effect of assignment to the intervention.

We assessed individually randomised studies according to the following domains.

- Bias arising from the randomisation process
- Bias due to deviations from intended interventions
- Bias due to missing outcome data
- Bias in measurement of the outcome
- Bias in selection of the reported result
- Overall bias

Cluster-randomised studies were assessed according to the following domains.

- Bias arising from the randomisation process
- Bias arising from the timing of identification and recruitment of individual participants in relation to timing of randomisation
- Bias due to deviations from intended interventions
- Bias due to missing outcome data
- Bias in measurement of the outcome
- Bias in selection of the reported result
- Overall bias

For each of the domains, we used the signalling questions and assessed the risk of bias as low risk, some concerns, or high risk. We also assessed the overall risk of bias. We used the RoB 2 Excel tool to implement RoB 2 (available from riskofbias.info). Further detail s regarding our assessments can be obtained from the review authors.

We set decision-rules to help us answer the signalling questions fairly and consistently. These can be found in Table 1.

Measures of treatment effect

Dichotomous data

We analysed dichotomous data using risk ratios (RRs) with 95% confidence intervals (CIs). This was relevant for several outcomes relating to mental health, where there is a threshold for clinical caseness, for example, 'depressed or not depressed'. We converted count data (e.g. number of contacts with healthcare professionals (HCPs)), to dichotomous data; for example, no contacts with HCPs versus one or more contacts with HCPs (Deeks 2011).

Continuous data

We analysed continuous data as mean differences (MDs) with 95% CIs when studies used the same outcome measure, or standardised mean differences (SMDs) with 95% CIs if different measurements were used. We anticipated that studies might include a mixture of change-from-baseline and final value scores.

We did not combine final value and change scores as SMDs, since the difference in standard deviation (SD) does not reflect differences in measurement scale, but differences in the reliability of the measurements (Deeks 2011).

There were several instances where it was necessary to combine outcomes that had been measured in different ways, that is, as dichotomous data in one study and as continuous data in another. In these instances, we converted data from either MDs to SMDs and then to log Odds Ratios (ORs), or from ORs to SMDs. We used the formulae which are given in Chapter 9.4.6 of the Cochrane Handbook (Deeks 2011). We had not anticipated the need for this and so this represents a change from the protocol to the review.

Unit of analysis issues

Cluster-randomised trials

We included cluster-RCTs as long as adjustment for the intracluster correlation coefficient (ICC) had been performed by the authors in a reasonable manner. If authors had adjusted for clustering, we reported their summary statistics and used these in meta-analyses, as appropriate. If they had not conducted such an adjustment, we planned to attempt to correct the analysis, using the methods described in Chapter 9 of the *Cochrane Handbook of Systematic Reviews for Interventions* (Deeks 2011). We planned to use an estimate of the ICC obtained from similar studies. However, this was not necessary.

Studies with multiple treatment groups

If studies had multiple arms, including alternative mental health literacy interventions that are not MHFA training, we undertook multiple pair-wise analyses comparing MHFA to each relevant comparator arm. If studies included more than one type of MHFA training intervention compared to a relevant comparator arm, we combined the MHFA intervention arms and compared the combined numbers with the control group, to give an estimate of the effect of MHFA training versus control (Deeks 2011).

Analyses using data from separate groups from the same study

Several studies measured outcomes in two different groups of participants (Jorm 2010b; Kidger 2016; Kidger 2021; Lipson 2014; Morgan 2019; Reavley 2014). We undertook meta-analyses of certain outcomes including data from each of the different groups. We considered this to be a reasonable approach as we were not double counting participants. However, we are aware that there are some limitations associated with this approach as the data from the two different groups may not be entirely independent of one another. We had not anticipated this in our protocol and this represents a change from protocol to review.

Dealing with missing data

We contacted the authors to retrieve any data that appeared to be missing from study reports, and for which no explanation was given. We considered imputing values for standard deviations (SDs), where these were not available from study reports or authors, in accordance with this guidance offered in Chapter 16 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011b), but this was not necessary.We did not impute other missing outcome data and only analysed the data available in the study reports. We planned to exclude data where the study authors had undertaken a 'per protocol' analysis and not analysed participants in the groups to which they were originally randomised, but this was not necessary.

Assessment of heterogeneity

We used a combination of different techniques to assess heterogeneity, as described in Chapter 9 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Deeks 2011). We visually inspected forest plots to assess the possibility of heterogeneity amongst studies. We calculated the heterogeneity of each outcome using the I^2 statistic, which estimates the percentage of variability due to differences between studies, rather than chance. The importance of the observed value of I^2 depends on (i) magnitude and direction of effects and (ii) strength of evidence for heterogeneity (e.g. P value from the chi-squared test, or a confidence interval for I^2). We interpreted the I^2 according to the scale included in Chapter 9 of the *Cochrane Handbook for Systematic Reviews of Interventions*, which suggests that: values of 0% to 40% might not be important; 30% to 60% may represent moderate heterogeneity; 50% to 90% may represent substantial heterogeneity; and 75% to 100% may represent considerable heterogeneity (Deeks 2011).

Assessment of reporting biases

If more than 10 studies were included in the analysis, we planned to create funnel plots of effect size versus study power, and examine these for signs of asymmetry. We also planned to use appropriate statistical tests, as suggested in Chapter 10 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Sterne 2011) and to explore possible reasons for this.

Data synthesis

We anticipated that there would be considerable heterogeneity amongst studies, due to the variety of study settings and populations. Therefore, we performed meta-analyses using a random-effects model. However, as part of the sensitivity analyses, we performed fixed-effect analyses and compared the results. We only performed a meta-analysis if participants, interventions, comparisons, and outcomes were judged to be sufficiently similar. We did not combine outcome data relating to the different populations which we are examining (individuals in the wider community, MHFA trainees, and organisations in which MHFA training has been delivered). If the heterogeneity of studies prohibited meta-analysis, or there were insufficient studies, we synthesised the results in a narrative format instead (Deeks 2011).

Subgroup analysis and investigation of heterogeneity

Where sufficient studies were available, we performed the following subgroup analyses to explore the data further, and to examine the reasons for any heterogeneity we detected (Deeks 2011).

- Setting: MHFA courses are delivered in various settings, for example schools, workplaces, and for the general public. We believe that the setting in which the MHFA intervention is delivered may affect outcomes.
- Tailored versus non-tailored: This intervention is often adapted to meet the needs of populations in different settings (for example, military personnel), which may impact on its effectiveness.

- Country: MHFA courses have been delivered in many countries worldwide, and ewe believe that the country in which the intervention is delivered is likely to affect outcomes.

Sensitivity analysis

To test the assumptions of the estimated effect size for the intervention, we also performed sensitivity analyses as follows (Deeks 2011):

- Excluding studies with inadequate assessor blinding;
- excluding studies at high risk or some concerns of attrition bias;
- excluding studies at high risk or some concerns of researcher allegiance bias;
- using a fixed-effect model instead of a random-effects model.

Summary of findings and assessment of the certainty of the evidence

We produced a summary of findings table illustrating the estimated effects for each of the three primary outcomes (mental health and well-being of recipients of MHFA programme, mental health service usage, and adverse effects of MHFA) for all three comparisons, and the amount of pooled data on which they are based. We estimated the assumed risks from the 'no intervention' group data. In addition, we assessed the certainty of the body of evidence for each outcome, using the GRADE approach, which takes into account risks of bias, directness of evidence, imprecision, unexplained heterogeneity, and risk of publication bias in the studies pooled for each outcome of interest (Schünemann 2011).

We used the GRADEpro software to create the summary of findings tables (GRADEpro GDT).

RESULTS

Description of studies

Results of the search

See: Figure 1

We identified 498 records through database searching and 203 from other sources. After deduplication, we were left with 2771 unique records. We scanned the titles and abstracts of studies described in these records and identified 82 articles to examine in more detail. We placed 21 records relating to 19 studies in awaiting assessment. We identified 54 systematic reviews and checked the studies included in these to identify any other potential studies for inclusion. We included 21 studies in our review, to which 56 of the articles related (41 study reports and 15 trial registrations). We excluded 19 articles. Seven records relate to six ongoing studies (five study reports and two trial registrations). We sought further data from the authors of 10 of the included studies, and used the data from eight of these.

Included studies

Full details of the included studies can be found in the Characteristics of Included Studies tables.

Participant and trial characteristics

All 21 included studies were published in English. Nine studies were carried out in Australia (Burns 2017; Hart 2018; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Morgan 2019; Reavley 2014; Reavley 2018), four studies were carried out in the UK (Davies 2018; Kidger 2016;Kidger 2021; Moffitt 2014), two studies were carried out in the USA (Lipson 2014; Mohatt 2017), two studies were carried out in Hong Kong (Hung 2021; Mak 2018), and single studies were carried out in Canada (Moll 2018), Denmark (Jensen 2016), Japan (Suzuki 2014), and Sweden (Svensson 2014). The earliest studies were published in 2004 (Jorm 2004; Kitchener 2004) and the most recent in 2021 (Hung 2021; Kidger 2021).

Eleven studies were individually-randomised controlled trials (Burns 2017; Davies 2018;Hung 2021; Jensen 2016; Jorm 2010a; Kitchener 2004; Mak 2018; Moffitt 2014; Moll 2018; Morgan 2019; Svensson 2014) and nine were cluster-randomised controlled trials (Jorm 2004; Jorm 2010b; Kidger 2016; Kidger 2021Lipson 2014; Mohatt 2017; Reavley 2014; Reavley 2018; Suzuki 2014). One trial (Hart 2018) was described as a cross-over cluster-randomised trial. Eighteen studies had two arms (Burns 2017; Davies 2018; Hart 2018; Hung 2021Jensen 2016; Jorm 2004; Jorm 2010b; Kidger 2016; Kidger 2021; Kitchener 2004; Lipson 2014; Mak 2018; Mohatt 2017; Moll 2018; Morgan 2019; Reavley 2014; Suzuki 2014; Svensson 2014), and three had three arms (Jorm 2010a; Moffitt 2014; Reavley 2018).

A total of 22,604 individuals were randomised. There was a wide variety of types of participants including tertiary education students (Burns 2017; Davies 2018; Hung 2021; Lipson 2014; Mak 2018; Reavley 2014) and tertiary education staff (Reavley 2014), secondary school students (Hart 2018; Jorm 2010b; Kidger 2016; Kidger 2021) and secondary school staff (Jorm 2010b; Kidger 2016; Kidger 2021), adults in workplaces (Jensen 2016), adults living in rural areas (Jorm 2004), adults from the community (Jorm 2010a), employees of public organisations (Kitchener 2004; Reavley 2018; Svensson 2014), managers in a Fire and Rescue Service (Moffitt 2014), military personnel (Mohatt 2017), hospital employees (Moll 2018), parents of teenagers and teenagers (Morgan 2019) and medical residents (Suzuki 2014).

Fifteen studies took place in populations that the authors considered to be at a higher risk of mental health problems (Burns 2017; Davies 2018; Hart 2018; Jorm 2010b; Hung 2021; Kidger 2016; Kidger 2021; Lipson 2014; Mak 2018; Moffitt 2014; Mohatt 2017; Moll 2018; Morgan 2019; Reavley 2014; Suzuki 2014), whilst in six studies, the authors did not specifically discuss this factor (Jensen 2016; Jorm 2004; Jorm 2010a; Kitchener 2004; Reavley 2018; Svensson 2014). All studies report recruiting male and female participants, apart from Mohatt 2017 in which no data were collected on gender. Only one study (Jorm 2004) targeted a population considered to be disadvantaged, or underserved, in this case, people living in rural communities.

Characteristics of interventions and comparators

The nature of the MHFA intervention varied considerably. Six studies evaluated a version of the standard adult MHFA course that had been adapted to the needs of specific groups (Burns 2017; Hung 2021; Jensen 2016; Mohatt 2017; Suzuki 2014; Svensson 2014). Six studies evaluated the standard adult MHFA course (Jorm 2004; Kitchener 2004; Lipson 2014; Mak 2018; Moffitt 2014; Moll 2018), although the length and mode of delivery of the course varied. In Jorm 2004 and Kitchener 2004 the course lasted nine hours and was spread over three sessions; in Moffitt 2014 and Moll 2018 the course lasted 12 hours and was spread over two days; in Lipson 2014 the course lasted 12 hours and the number of days over which

it was spread was not reported; in Mak 2018 the course lasted 12 hours and was delivered over three weeks. Three studies used MHFA courses specifically designed for different groups: Hart 2018 evaluated teen MHFA delivered to secondary school students and also offered Youth MHFA to parents and teachers at participating schools whilst Jorm 2010b evaluated Youth MHFA modified for high school teachers. Morgan 2019 evaluated Youth MHFA delivered to parents of teenagers. Two studies evaluated non-face-to-face methods of delivering MHFA training (Jorm 2010a; Davies 2018), and Davies 2018 also adapted the course content to make it suitable for British medical students. Three studies evaluated a multi-faceted intervention, of which MHFA training was a part (Kidger 2016; Kidger 2021; Reavley 2014). In Reavley 2018 there were two MHFA arms. The first arm comprised of an e-learning MHFA course that lasted six hours while the second arm comprised of the same course with an added four-hour face-to-face session.

Nine studies used a 'wait-list' control comparison in which control group participants were offered MHFA training after the final follow-up (Burns 2017; Hung 2021; Jensen 2016; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Mak 2018; Svensson 2014). Five studies did not offer any treatment to their control group (Davies 2018; Kidger 2016; Kidger 2021; Mohatt 2017; Reavley 2014), whilst one study reported that the control group only had access to pre-existing training (Lipson 2014). Five studies had an active or attention control group: in Hart 2018, Morgan 2019 and Reavley 2018, the control group received a physical first aid course, whilst in Moffitt 2014 the control group attended a leaflet session. One study offered a training program on depression and suicidality (Suzuki 2014). Two studies offered an alternative mental health literacy intervention (Moll 2018; Moffitt 2014).

Characteristics of outcomes

Studies reported outcomes measured at a variety of time points in addition to baseline measurements; one study only measured outcomes immediately post intervention (Moffitt 2014), whilst the longest follow-up reported was three years (Morgan 2019). Most studies reported outcomes at time points ranging from post intervention to six months (Burns 2017; Davies 2018; Hung 2021; Jensen 2016; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Lipson 2014; Mak 2018; Moll 2018; Suzuki 2014; Svensson 2014). Kidger 2016 reported outcomes at between six months and a year post intervention; Hart 2018 reported outcomes post-intervention and at 12 months whilst Mohatt 2017 reported outcomes at four months and eight months post intervention. Reavley 2014 reported outcomes at between 4 and 11 months and 16 to 23 months, whilst Reavley 2018 reported outcomes at post intervention, 12 months, and 24 months. Kidger 2021 also reported outcomes at 12 months and 24 months.

Primary outcomes

Mental health and well-being of individuals in the wider community measured using a validated measure

Seven studies reported the first of our primary outcomes. Jorm 2010b, Kidger 2016 and Kidger 2021 used the Strengths and Difficulties Questionnaire (SDQ) to measure the risk of mental health problems in secondary school students. Kidger 2016 also used the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) to measure mental well-being in secondary school students and staff, along with the Patient Health Questionnaire (PHQ-9) to measure symptoms of depression in school staff. Kidger 2021 used the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) to measure mental well-being in secondary school students and staff, along with the Patient Health Questionnaire (PHQ-8) to measure symptoms of depression in school staff. Lipson 2014 and Reavley 2014 used the Kessler Psychological Distress Scale (K6) to measure psychological distress in tertiary education students. Reavley 2014 also used this measure with tertiary education staff. Morgan 2019 used three scales to measure the mental health and well-being of adolescents: the Strengths and Difficulties Questionnaire (SDQ) (Parent and Child Report versions) and the Kessler Psychological Distress Scale (K6 scale.)

Mental health service usage, measured by objective service records

The only study to report this outcome was Lipson 2014. The authors reported the average number of weekly visits to campus counselling centres.

Adverse effects of MHFA

Hart 2018 reported on distress caused by training at post-intervention. Two studies (Morgan 2019; Reavley 2018) considered adverse events. In Reavley 2018, MHFA trainees who felt distressed during or on completion of the course were encouraged to contact the trial manager. However, this was not collected systematically and is not a reliable measure. In Morgan 2019, the authors note that no harms were reported. However, this again was not measured systematically. The process evaluation that took place alongside the Kidger 2021 study provided qualitative evidence that considered adverse effects of the intervention, but including such data is beyond the scope of this review. The triallists also implemented various safety reporting procedures, however these relied on passive, rather than active collection of data about harms and the information was not published. We did not consider the data suitable for inclusion in this review.

Secondary outcomes: individuals in the wider community

Knowledge about mental health problems

Three studies reported this outcome. Jorm 2010b measured knowledge in two different ways in both secondary school students and staff. Firstly, the authors measured participants' beliefs about the helpfulness of various interventions and professionals for a person with depression described in a vignette. These beliefs were then compared with the beliefs of health professionals to assess how many interventions participants could correctly identify. Mental health knowledge was also assessed by asking a participant what they thought was wrong with the person in the vignette and measuring whether the correct answer of 'depression' was given. These methods of measuring mental health knowledge are used frequently throughout the studies included in this review, although sometimes vignettes of people with other mental health problems such as schizophrenia or social anxiety are used as well (see Characteristics of included studies).

Reavley 2014 measured this outcome in tertiary education students and staff using both the beliefs about helpfulness and vignette recognition measure, using a depression vignette.

Stigmatising attitudes towards mental health problems, assessed by a validated social distance or stigma scale

Jorm 2010b, Lipson 2014, Morgan 2019 and Reavley 2014 measured this outcome. Jorm 2010b measured both personal stigma and perceived stigma; personal stigma is defined as an individual's own

feelings of stigma towards a person with mental health problems, whereas perceived stigma is defined as to what extent an individual believes that other people hold stigmatising attitudes. Jorm 2010b, however, reported the results of individual items relating to stigma, and no overall score was reported. Lipson 2014 reported the results of a personal stigma scale developed from the Discrimination-Devaluation Scale, whilst Morgan 2019 reported stigma using a Social Distance Scale and a psychosis vignette. Reavley 2014 reported the results of a Social Distance Scale, and the personal stigma subscale of the Depression Stigma Scale. Social distance scales measure an individual's desire for social distance between themselves and a person with a particular characteristic, in this case a mental health problem.

Secondary outcomes: MHFA trainees

Knowledge about mental health problems

Fourteen studies reported this outcome (Burns 2017; Davies 2018; Hart 2018; Hung 2021; Jensen 2016; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Mak 2018; Moll 2018; Morgan 2019; Reavley 2018; Svensson 2014) and there was considerable variation between studies in terms of how the outcome was measured. Burns 2017, Jensen 2016, Jorm 2010b, Morgan 2019 and Svensson 2014 all used questionnaires to assess mental health related knowledge, whilst Moll 2018 used a mental health literacy tool based on vignettes. Ten studies (Burns 2017; Davies 2018; Hart 2018; Hung 2021; Jensen 2016; Jorm 2010a; Jorm 2010b; Kitchener 2004; Mak 2018; Svensson 2014) used a depression vignette to assess mental health knowledge; six studies used a schizophrenia vignette (Hung 2021;Jensen 2016; Jorm 2010a; Kitchener 2004; Mak 2018Svensson 2014), two (Davies 2018; Hart 2018) used a social anxiety vignette and one (Morgan 2019) used vignettes based on depression, social phobia, an eating disorder not otherwise specified, and psychosis. These were reported as a composite outcome. Eight studies (Hart 2018; Hung 2021; Jensen 2016; Jorm 2010a; Jorm 2010b; Kitchener 2004; Mak 2018; Svensson 2014) measured beliefs about treatment for depression using a vignette and six studies measured beliefs about treatment for schizophrenia using a vignette (Hung 2021;Jensen 2016; Jorm 2010a; Kitchener 2004; Mak 2018; Svensson 2014). Hart 2018 used a social anxiety vignette. Reavley 2018 used both a depression and post-traumatic stress disorder (PTSD) vignette and reported the results separately for each group. Jorm 2004 used both a depression and a schizophrenia vignette, but did not report the results separately for each group.

Stigmatising attitudes towards mental health problems, assessed by a validated social distance or stigma scale

Sixteen studies reported this outcome (Burns 2017; Davies 2018; Hart 2018; Hung 2021; Jensen 2016; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Lipson 2014; Mak 2018; Moffitt 2014; Moll 2018; Morgan 2019; Reavley 2018; Svensson 2014) and there was considerable variation between studies in terms of how the outcome was measured. Seven studies (Burns 2017; Davies 2018;Jensen 2016; Jorm 2010a; Jorm 2010b; Reavley 2018; Svensson 2014) measured participants' stigma towards a person with depression, whilst five studies (Burns 2017; Jensen 2016; Jorm 2010a; Jorm 2010b; Svensson 2014) measured the level of stigma that participants perceived that other people felt towards people with depression (perceived stigma). Similarly, three studies (Jensen 2016; Jorm 2010a; Svensson 2014) measured both personal and perceived stigma towards a person with schizophrenia.

Five studies (Burns 2017; Hung 2021; Jorm 2010a; Kitchener 2004; Hart 2018) measured the level of social distance that participants felt from a person with depression, whilst four studies (Hung 2021;Jorm 2010a; Kitchener 2004; Morgan 2019) measured social distance from a person with schizophrenia or psychosis. Hart 2018 measured social distance from a person with social anxiety. Reavley 2018 measured social distance from a person with depression and from a person with PTSD and reported the results separately. Jorm 2004 measured social distance from a person with depression and from a person with schizophrenia, but did not report the results separately.

Lipson 2014 used a scale developed from the Discrimination-Devaluation Scale to measure stigma, Mak 2018 used a scale developed in Hong Kong, Moll 2018 used the MHCC Opening Minds Scale, Moffitt 2014 used the Attitudes to Mental Illness Scale (AMIQ) and Reavley 2018 used the Personal Stigma Scale.

Self-reported contacts, or help provided to people with a mental health problem, since training

Ten studies measured this outcome (Davies 2018; Jensen 2016; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Lipson 2014; Moll 2018; Reavley 2018; Svensson 2014). Eight studies measured whether participants had had contact with a person with mental health problems (Davies 2018; Jorm 2004; Jorm 2010a; Jorm 2010b; Kitchener 2004; Lipson 2014; Moll 2018; Reavley 2018), whilst six studies (Jensen 2016; Jorm 2004; Kitchener 2004; Moll 2018; Reavley 2018; Svensson 2014) measured whether participants had offered help to a person with mental health problems. Davies 2018 and Moll 2018 measured what types of help participants had offered from a list of possible options.

Mental health and well-being of trainees using a validated measure

Nine studies measured this outcome (Davies 2018; Hart 2018; Hung 2021; Jorm 2010a; Jorm 2010b; Kitchener 2004; Lipson 2014; Morgan 2019; Reavley 2018). Davies 2018 used the DASS-21 (Depression, Anxiety and Stress Scale) to measure mental health, and reported the results from each of the three subscales (depression, anxiety and stress) separately. Jorm 2010a used the K10 scale to measure psychological distress, whilst Hart 2018, Jorm 2010b, Lipson 2014, Morgan 2019 and Reavley 2018 used the K6 scale to measure psychological distress. Kitchener 2004 used the SF-12 (Short Form -12) to assess mental health and Hung 2021 used the Chinese Health Questionnaire.

Several studies measured whether participants reported having experienced a mental health problem themselves, but this was not measured using a validated measure.

Absenteeism

Kidger 2021 measured teacher absenteeism and student attendance.

Productivity and cost-effectiveness

These outcomes were not measured by any study.

One study (Mohatt 2017) did not contribute any outcomes that were included in the review. The knowledge outcome measured related to a knowledge of mental health resources and did not relate to mental health problems. Stigma was not measured using a validated scale.

Excluded studies

Nineteen studies were excluded after the full text had been reviewed. The most common reason was that the study was not a RCT (15 studies). The other four studies did not evaluate MHFA. We have included some examples of excluded studies: see Characteristics of excluded studies.

Ongoing studies

We identified six ongoing studies, which we will consider for inclusion in future versions of this review: see Characteristics of ongoing studies (ACTRN12619000464167; ACTRN12621000756820; ACTRN12621001589875; Atanda 2020; Eisman 2020; Wheeler 2020).

Risk of bias in included studies

Details of our risk of bias judgements relating to each analysis can be found in the Risk of bias (tables). Full details of our responses to the RoB 2 signalling questions can be found in an online data repository (Richardson 2023). In this section we provide brief summaries of the risk of bias assessments for our three primary outcomes for the time points at which we had numerical data.

Comparison 1: MHFA training versus no intervention

1.1 Mental health and well-being of individuals in the wider community

*Six months to a year:*All six results from the three studies included in the meta-analysis were at high risk of bias overall. Results from all three studies were at low risk of bias in the domains of randomisation and selection of the reported result, but the results from two of these studies (Jorm 2010b; Reavley 2014) were at high risk of bias in the domains of deviations from intended interventions, missing outcome data and measurement of the outcome. The results from Kidger 2021 were at high risk of bias in the domains of deviations from intended interventions and measurement of the outcome, and at some concerns about bias in the domain of missing outcome data.

*One year plus:*All four results from the two studies included in the meta-analysis were at high risk of bias overall. Results from both studies were at low risk of bias in the domains of randomisation and selection of the reported result, but were at high risk of bias in the measurement of the outcome domain. The results from Kidger 2021 were at low risk of bias in the domains of deviations from intended interventions and missing outcome data, whilst the results from Reavley 2014 were at high risk of bias for these two domains.

Comparison 2: MHFA training versus alternative mental health literacy interventions

Neither study measured any of our primary outcomes.

Comparison 3: MHFA training versus alternative interventions

3.1 Mental health and well-being of individuals in the wider community

*One year plus:*Morgan 2019 measured this outcome using three different scales. Results from all three scales were at low risk of bias in the domains of randomisation, deviations from intended interventions and selection of the reported result, but at high risk of bias in the domains of missing outcome data and measurement of the outcome. The results were therefore at high risk of bias overall.

Assessment of reporting biases

We were not able to construct funnel plots to examine publication bias, as none of our meta-analyses included enough studies to make such an analysis meaningful. However, we had some concerns over reporting biases in several of our included studies. Jorm 2010b reported on several outcomes that were not pre-specified in the trial registry entry. These included outcomes examining confidence in providing help to students and psychological distress. This meant we were concerned that there were other outcomes measured that were not reported. The authors of Moffitt 2014 did not report on several outcomes that were mentioned in the companion paper (Robson 2010). These included sickness absence for trainees.

Effects of interventions

See: **Summary of findings 1** Summary of findings table - Mental Health First Aid (MHFA) training compared to control for improving mental health and wellbeing; **Summary of findings 2** Summary of findings table - Mental Health First Aid (MHFA) training compared to alternative mental health literacy interventions for improving mental health and wellbeing; **Summary of findings 3** Summary of findings table - Mental Health First Aid (MHFA) training compared to alternative intervention for improving mental health and wellbeing

Comparison 1: MHFA training versus no intervention (including waiting list controls)

Twelve studies (18,376 participants) contributed data towards this comparison (Burns 2017; Davies 2018; Hung 2021; Jorm 2004; Jorm 2010a; Jorm 2010b; Kidger 2016; Kidger 2021; Kitchener 2004; Lipson 2014; Reavley 2014; Svensson 2014). We have not yet been able to obtain data from Mak 2018 in a format that is suitable for our analyses. See also Summary of findings 1.

Primary outcomes

1.1 Mental health and well-being of individuals in the wider community

Post-intervention: No study measured this outcome at post-intervention.

Up to six months: Lipson 2014 measured this outcome in college residents at up to six months following MHFA training, using the K6 measure of psychological distress. As this was a cluster-RCT, we report the authors' summary statistic. The intervention effect size is reported in the study paper as - 0.17 (SE: 0.11; P = 0.13) suggesting a lack of evidence of a difference between interventions and control.

Six months to a year: Three studies (Jorm 2010b; Kidger 2016; Reavley 2014) measured this outcome at between six and 12 months. Kidger 2016 used both the SDQ and WEMWBS in students: we have included the SDQ measure in the meta-analysis as this is also used in Jorm 2010b. Kidger 2016 also used both the PHQ-9 and WEMWBS in staff; we have included the WEMWBS in the meta-analysis as this is a general measure of mental health, as is the SDQ. The PHQ-9, in contrast, measures symptoms of depression. The pooled estimate for the three studies (odds ratio (OR) 0.88; 95% confidence interval (CI) 0.61 to 1.28; 3 studies; 3939 participants; Analysis 1.1) showed little to no effect of MHFA training, but the confidence intervals were wide and encompassed both positive and negative effects. According to the GRADE criteria, we judged

the evidence to be of very low certainty. There is a high degree of heterogeneity (I^2 = 62%;) amongst the studies.

Kidger 2016 also measured student mental health using the WEMWBS and staff mental health using the PHQ-9. The point estimates reported by the authors were mean difference (MD) 0.64, 95% CI -0.22 to 1.49; P = 0.12; 1524 participants, and MD 0.20, 95% CI -0.73 to 1.14; P = 0.60; number of participants not stated, respectively, showing little to no effect of MHFA training. However, the confidence intervals were wide and encompassed both positive and negative effects.

One year plus: Two studies (Kidger 2021; Reavley 2014) measured mental health of individuals at more than one year follow-up. As above, Kidger 2021 used both the SDQ and WEMWBS in students, and we have included the SDQ measure in the meta-analysis. This study used both the PHQ-8 and WEMWBS in staff; we have included the WEMWBS in the meta-analysis as this is a general measure of mental health, as is the SDQ. The PHQ-8, in contrast, measures symptoms of depression. The pooled estimate showed little to no difference between MHFA training and no intervention (OR 1.10, 95% CI 0.98 to 1.22; 2 studies; 5049 participants; Analysis 1.2) but the confidence intervals were wide and encompassed both positive and negative effects.

1.2 Mental health service usage

Post-intervention: No study measured this outcome at post-intervention.

Up to six months: Lipson 2014 measured the average number of weekly visits to campus counselling centres pre-intervention and up to six months follow-up and found no evidence of a difference between MHFA training and no intervention (P = 0.56).

Six months to one year: No study measured this outcome at six months to one year.

One year plus: No study measured this outcome at this time point.

1.3 Adverse effects

This outcome was not measured in an appropriate format in any study.

Secondary outcomes

1.4 Mental health knowledge: individuals in the wider community

Post-intervention: No study measured this outcome at post-intervention.

Up to six months: No study measured this outcome at up to six months.

Six months to one year: Two studies (Jorm 2010b; Reavley 2014) measured this outcome using the same two measures (vignette recognition and appropriate beliefs). We report both results. For mental health knowledge, determined by vignette recognition, the point estimate (OR 1.51, 95% CI 0.80 to 2.82; 2 studies; 1990 participants; Analysis 1.3) showed a possible benefit of MHFA training, but the confidence intervals were wide and encompassed both positive and negative effects. There was a moderate degree of heterogeneity (I^2 = 53%) amongst the studies. We had planned to undertake subgroup analyses examining the effect of setting, tailored versus non-tailored interventions and country, but a lack of studies meant this was not possible. For mental health knowledge, measured by appropriate beliefs, the point estimate showed little to no difference (OR 0.88, 95% CI 0.61 to 1.26; 2 studies; 2111 participants; Analysis 1.4) but the confidence intervals were wide and encompassed both positive and negative effects.

One year plus: One study (Reavley 2014) measured this outcome using these two different measures at the over one-year time point. For MHFA training measured by vignette recognition, the point estimate (OR 1.90, 95% CI 0.77 to 4.70; 620 participants; Analysis 1.5) showed a possible benefit of MHFA, but the confidence intervals were wide and encompassed both positive and negative effects. For MHFA training measured by appropriate beliefs, the point estimate (OR 0.86, 95% CI 0.44 to 1.70; 620 participants; Analysis 1.6) showed little to no difference, but the confidence intervals were wide and encompassed both positive and negative effects

1.5 Mental health stigma: individuals in the wider community

Post-intervention: No study measured this outcome at post-intervention.

Up to six months: One cluster-RCT (Lipson 2014) reported personal stigma, measured by the Discrimination-Devaluation Scale, at up to six months follow-up but found no evidence of a difference between MHFA training and no intervention (P = 0.21).

Six months to a year: Stigma was measured in various ways at the six months to one year follow-up point. Jorm 2010b measured personal and perceived stigma towards a person with depression. However, only individual scale items were reported (for example, 'best to avoid people with that problem') and so this outcome measure could not be used in a meta-analysis. One study (Reavley 2014) reported two measures: personal stigma and social distance in both college students and college staff. The point estimates for personal stigma (OR 1.08, 95% CI 0.61 to 1.90; 833 participants; Analysis 1.7) and social distance (OR 1.12, 95% CI 0.58 to 2.15; 833 participants; Analysis 1.8) showed little to no difference, but the confidence intervals were wide and encompassed both positive and negative effects

One year plus: One study (Reavley 2014) also reported these outcomes at one year plus. The point estimates for personal stigma (OR 1.30, 95% CI 0.66 to 2.54; 620 participants; Analysis 1.9) and social distance (OR 1.20, 95% CI 0.66 to 2.18; 620 participants; Analysis 1.10), both showed a small potential benefit of MHFA training over no intervention, but the confidence intervals were wide and encompassed both positive and negative effects.

1.6 Mental health knowledge: trainees

Post-intervention: Four studies (Burns 2017; Hung 2021; Jorm 2010a; Jorm 2010b) measured this outcome using vignette recognition (depression). The point estimate (OR 2.91, 95% CI 1.36 to 6.24; 4 studies; 937 participants; Analysis 1.11) showed a benefit of MHFA training over no intervention, but the confidence intervals were wide and there was moderate heterogeneity (I^2 = 52%).

Up to six months: Four studies (Burns 2017; Davies 2018; Jorm 2004; Kitchener 2004) measured this outcome in a variety of different ways. The most frequently used was vignette recognition (depression). Meta analysis indicated the MHFA training may make

little to no difference in improving mental health knowledge (RR 1.07, 95% CI 1.01 to 1.13; 3 studies; 426 participants; Analysis 1.12).

Six months to one year: Five studies (Hung 2021;Jensen 2016; Jorm 2010a; Jorm 2010b; Svensson 2014) measured this outcome. Meta analysis indicated that MHFA training may be beneficial in improving mental health knowledge (OR 2.62, 95% CI 1.21 to 5.68; 5 studies; 4 studies; 1184 participants; Analysis 1.13) but the confidence intervals were wide and there was high heterogeneity (I^2 = 81%). For beliefs about treatment, the point estimate (standardised mean difference (SMD) 0.18, 95% CI -0.03 to 0.39; 4 studies; 1038 participants; Analysis 1.14) a possible small benefit of MHFA training, but the confidence intervals were wide and encompassed both positive and negative effects. We excluded the Jorm 2010b study from this analysis as the summary MD statistic was based on change from baseline data and could not be combined with endpoint data.

One year plus: No study measured this outcome at this time point.

1.7 Mental health stigma: trainees

Post-intervention: Three studies (Burns 2017; Jorm 2010a; Jorm 2010b) measured Personal Stigma (Depression) and Perceived Stigma (Depression). However, Jorm 2010b only reported individual scale items (for example, 'best to avoid people with that problem') and so this outcome measure could not be used in a meta-analysis. Meta-analysis of two studies (Burns 2017; Jorm 2010a) indicated the MHFA training may be more effective than wait list in reducing personal stigma (SMD 0.41 (95% CI 0.17 to 0.64; 359 participants; Analysis 1.15). For perceived stigma (SMD 0.18, 95% CI -0.31 to 0.67; 2 studies; 359 participants; Analysis 1.16) and social distance (SMD -0.40, 95% CI --1.10 to 0.0.31; 3 studies; 702 participants; Analysis 1.17), both point estimates showed a possible benefit of MHFA training, but the confidence intervals were wide and encompassed both positive and negative effects.

Up to six months: Five studies (Burns 2017; Davies 2018; Jorm 2004; Kitchener 2004; Lipson 2014) reported this outcome in a variety of different ways. The most frequently used measure was Personal Stigma (Depression), which was reported in two studies (Burns 2017; Davies 2018). Meta-analysis indicated the MHFA training may be more effective than wait list in improving stigma in MHFA trainees (SMD 0.35, 95% CI 0.02 to 0.68; 2 studies; 144 participants; Analysis 1.18).

Six months to a year: Four studies (Jensen 2016; Jorm 2010a; Jorm 2010b; Svensson 2014) measured Personal Stigma (Depression) and Perceived Stigma (Depression). However, Jorm 2010b only reported individual scale items (for example, 'best to avoid people with that problem') and so this outcome measure can not be used in a meta-analysis. Meta-analysis indicated the MHFA training may be more effective than wait list in reducing both personal stigma (SMD 0.27, 95% CI -0.07 to 0.60; 3 studies; 706 participants; Analysis 1.19), and perceived stigma (Depression) (SMD 0.07, 95% CI -0.08 to 0.23; 3 studies; 706 participants; Analysis 1.20) in MHFA trainees, but the confidence intervals around the point estimates were wide and encompassed both positive and negative effects.

One year plus: No study measured this outcome at this time point.

1.8 Self-reported contacts, or help provided to people with a mental health problem, since training

Post-intervention: Jorm 2010b asked trainees whether they had talked to students or colleagues about their mental health problems. However, as this measure was taken immediately post-intervention, it seems unlikely that the training would have influenced behaviour.

Up to six months: Four studies (Davies 2018; Jorm 2004; Kitchener 2004; Lipson 2014) measured contact with people with mental health problems whilst three studies (Davies 2018; Jorm 2004; Kitchener 2004) measured help offered to people with a mental health problem. As contact was measured more frequently, we planned to pool these data. We were not able to convert the count data from Jorm 2004 and Lipson 2014, as there was insufficient information provided in the paper to adjust for clustering. For pooled analysis of the two remaining studies that reported an effect size measure (Davies 2018; Kitchener 2004), the point estimate (RR 1.05, 95% CI 0.84 to 1.32; 2 studies; 336 participants; Analysis 1.21) showed little to no difference between MHFA training and no intervention, but the confidence interval was wide and encompassed both positive and negative effects.

Six months to a year: Four studies (Jensen 2016; Jorm 2010a; Jorm 2010b; Svensson 2014) measured this outcome. Jensen 2016 reported a measure which combined contact with and help offered to people with a mental health problem, whilst Svensson 2014 reported a measure of help offered. Both Jorm 2010a and Jorm 2010b reported contact with a person with a mental health problem; Jorm 2010b reported both contact with students and contact with colleagues. We pooled the data from Jorm 2010a with the data relating to contact with students from Jorm 2010b and found that MHFA training may be more effective than wait list (OR 1.71, 95% CI 1.01 to 2.90; 2 studies; 472 participants; Analysis 1.22), although the wide confidence intervals mean this estimate is imprecise.

One year plus: No study measured this outcome at this time point.

1.9 Mental health and well-being of trainees

Six studies (Davies 2018; Hung 2021; Jorm 2010a; Jorm 2010b; Kitchener 2004; Lipson 2014) reported this outcome using a variety of different scales.

Post-intervention: Jorm 2010a used the K10 scale, whilst Jorm 2010b used the K6 scale. Hung 2021 used the Chinese Health Questionnaire. Pooling the data (OR 0.48, 95% CI 0.18 to 1.26; 3 studies; 845 participants; Analysis 1.23) showed a possible benefit of MHFA training, but the confidence intervals were wide and encompassed both positive and negative effects.

Up to six months: Only one study (Davies 2018) measured this outcome using three separate scales of the DASS-21. Point estimates for Depression scale (MD 1.55, 95% CI -4.38 to 7.48; 35 participants), Anxiety scale: (MD -1.67, 95% CI -6.19 to 2.85; 35 participants) and Stress scale (MD -2.27, 95% CI -7.47 to 2.93; 35 participants) showed mixed effects for MHFA training, but the confidence intervals were wide and encompassed both positive and negative effects.

Kitchener 2004 measured this outcome using the SF-12 scale, whilst Lipson 2014 used the K6 scale. Pooled analysis (SMD 0.10, 95%

CI -0.07 to 0.26; 2 studies; 854 participants; Analysis 1.24) showed little to no difference between MHFA training and control, but the confidence interval was wide and encompassed both positive and negative effects.

Six months to a year: Three studies (Hung 2021;Jorm 2010a; Jorm 2010b) also measured this outcome at this time point. Pooled analysis (OR 0.40, 95% CI 0.17 to 0.96; 3 studies; 795 participants; Analysis 1.25) showed a possible benefit for MHFA training over no intervention, although there was high heterogeneity (I^2 = 81%).

One year plus: No study measured this outcome at this time point.

1.10 Absenteeism, productivity and cost-effectiveness

Teacher absenteeism and student attendance were measured in Kidger 2021. Teacher absenteeism was 4% higher in the intervention group than in the control group over the course of follow-up (ratio of geometric means 1.04, 95% CI 1.00 to 1.09; 1717 participants). There was little to no difference for student attendance (MD: 0.17 (–0.60 to 0.95; 25 schools), with wide confidence intervals encompassing positive and negative effects.

Comparison 2: MHFA training versus alternative mental health literacy interventions

One study (192 participants) contributed data to this comparison (Moll 2018). It was not possible to extract data reliably from Moffitt 2014 as results were shown graphically and no standard deviations (SDs) were reported. See also Summary of findings 2.

Primary outcomes

2.1 Mental health and well-being of individuals in the wider community

Neither study measured this outcome.

2.2 Mental health service usage

Neither study reported this outcome.

2.3 Adverse effects

Neither study reported this outcome.

Secondary outcomes

2.4 Mental health knowledge: individuals in the wider community

Neither study reported this outcome.

2.5 Mental health stigma: individuals in the wider community

Neither study reported this outcome.

2.6 Mental health knowledge: trainees

This outcome was reported in both trials. However, it was not possible to extract data reliably from Moffitt 2014 as results were shown graphically and no SDs were reported.

Post-intervention: Moll 2018 measured this outcome using a mental health literacy scale and found that MHFA training may perform similarly to a mental health literacy intervention called Beyond Silence (BS) (MD 0.32, 95% CI -2.37 to 3.01; 167 participants), as an MD of 0.32 represents a negligible difference: participants in the Beyond Silence group scored an average of 65.87 (SD 9.28) whilst those in the MHFA group scored an average of 66.19 (SD 8.27). Confidence intervals were wide and encompassed both positive and negative effects.

Up to six months: Moll 2018 found that MHFA training may perform similarly to a mental health literacy intervention (MD -0.03, 95% CI -3.18 to 3.12; 150 participants) as the difference is negligible: participants in the BS group scored an average of 65.79 (SD:10.57) whilst those in the MHFA group scored an average of 65.76 (SD 8.87). Confidence intervals were wide and encompassed both positive and negative effects.

Six months to a year: the outcome was not measured at this time point.

One year plus: No study measured this outcome at this time point.

2.7 Mental health stigma: trainees

This outcome was reported in both trials. However, it was not possible to extract data reliably from Moffitt 2014 as results were shown graphically and no SDs were reported.

Post-intervention:Moll 2018 measured this outcome using a mental health stigma scale and found that MHFA training may perform similarly to a mental health literacy intervention (MD 0.03, 95% CI -2.21 to 2.27; 167 participants), as the difference is negligible: participants in the BS group scored an average of 39.10 (SD 7.96), whilst those in the MHFA group scored an average of 39.13 (SD 6.62). Confidence intervals were wide and encompassed both positive and negative effects.

Up to six months: Moll 2018 found that MHFA training may perform similarly to a mental health literacy intervention (MD 1.75, 95% CI -0.75 to 4.25; 150 participants), as the difference is negligible: participants in the BS group scored an average of 39.26 (SD 7.82), whilst those in the MHFA group scored an average of 41.01 (SD 7.77). Confidence intervals were wide and encompassed both positive and negative effects.

Six months to a year: The outcome was not measured at this time point.

One year plus: No study measured this outcome at this time point.

2.8 Self-reported contacts, or help provided to people with a mental health problem, since training

Moll 2018 reported this outcome in several different ways: contact with a person with mental health problems, help offered to a person with mental health problems and the type of help provided. We report the outcome of contact, as this is the outcome we focused on in Comparison 1.

Post-intervention: Moll 2018 found that there was little difference between MHFA training and the alternate mental health literacy intervention (RR 0.97, 95% CI 0.79 to 1.19; 167 participants), but the confidence intervals were wide and encompassed both positive and negative effects. Although this measure was taken post-intervention, the training had started three months previously, and so there had been some time for the intervention to have had an effect.

Up to six months: Moll 2018 found that there may be little to no difference between MHFA training and a mental health literacy intervention (RR 0.86, 95% CI 0.66 to 1.11; 150 participants) but the

confidence interval was wide and encompassed both positive and negative effects.

Six months to a year: The outcome was not measured at this time point.

One year plus: No study measured this outcome at this time point.

2.9 Mental health and well-being of trainees

This outcome was not reported using a validated measure.

2.10 Absenteeism, productivity and cost-effectiveness

These outcomes were not measured in any study.

Comparison 3: MHFA training versus alternative interventions

Four studies (3048 participants) contributed data to this comparison (Hart 2018; Morgan 2019; Reavley 2018; Suzuki 2014). In Hart 2018, Morgan 2019 and Reavley 2018 the alternative intervention was physical first aid training (PFA) while in the study by Suzuki 2014, the alternative intervention was usual training in depression. It was not possible to extract data reliably from Moffitt 2014 as results were shown graphically and no SDs were reported. See also Summary of findings 3.

Primary outcomes

3.1 Mental health and well-being of individuals in the wider community

Only Morgan 2019 reported this outcome using three different scales at 1 year, 2 year and 3 year follow-up. We report the three-year results, as previously specified. Results for SDQ (Parent Report: RR 0.71, 95% CI 0.24 to 2.09; 147 participants), SDQ (Child Report: RR 0.57, 95% CI 0.16 to 2.01; 118 participants) and K6 (RR 0.91, 95% CI 0.34 to 2.47; 37 participants) appear to show a benefit of over PFA, but the wide confidence intervals show very serious imprecision and the study was deemed to be at high risk of overall bias.

3.2 Mental health service usage

No study reported this outcome.

3.3 Adverse effects

Hart 2018 measured self-reported distress caused by attending the training course at post-intervention. The authors did not report an adjusted effect estimate, but noted that participants who had attended the MHFA course were significantly more likely than those who attended the PFA course to report that the information in the training made them feel distressed. In Reavley 2018, participants were encouraged to contact the trial manager to report any adverse events, but none were reported. In Morgan 2019, participants were encouraged to advise the trial manager if they used any of the support services about which they were advised. They were also instructed to alert the relevant person if they felt distressed during the interviews or the course. No harms were reported. However, these studies do not appear to have used systematic measures to collect information about adverse effects.

Secondary outcomes

3.4 Mental health knowledge: individuals in the wider community

No study measured this outcome.

3.5 Mental health stigma: individuals in the wider community

Only Morgan 2019 reported this outcome using a social distance scale and a psychosis vignette. There was little to no difference between groups (measured at three years plus) (MD -0.04, 95% CI -0.34 to 0.26; 116 participants), but the confidence intervals were wide and encompassed both positive and negative effects.

3.6 Mental health knowledge: trainees

Two studies (Hart 2018; Reavley 2018) reported this outcome in several different ways: vignette recognition (depression/suicidality), vignette recognition (social anxiety), vignette recognition (PTSD), appropriate beliefs (depression), appropriate beliefs (social anxiety) and appropriate beliefs (PTSD). Morgan 2019 reported this outcome using a knowledge quiz and a composite vignette recognition outcome

Post-intervention: We report the outcomes of vignette recognition (depression) and appropriate beliefs (depression), as these were the outcomes most frequently reported by the studies at this time point. For vignette recognition of depression of MHFA trainees, the point estimate (OR 1.48, 95% CI 0.79 to 2.79; participants = 1402; 2 studies; 1402 participants; Analysis 3.1) appeared to show a benefit of MHFA over PFA, but the confidence interval was wide and encompassed both positive and negative effects. There may be a difference in favour of MHFA in improving beliefs about helpfulness in MHFA trainees post-intervention (SMD 0.64, 95% CI 0.25 to 1.04; 2 studies; 1401 participants; Analysis 3.2).

One year plus: At this time point, the most frequently used measure was vignette recognition (depression or suicidality). This was measured by both Hart 2018 and Reavley 2018. The pooled data appeared to show a benefit of MHFA over PFA, but the confidence interval was wide and encompassed both positive and negative effects (OR 1.52, 95% CI 0.90 to 2.59; 2 studies; 1137 participants; Analysis 3.3).

3.7 Mental health stigma: trainees

Two studies (Hart 2018; Reavley 2018) reported this outcome in three different ways: Hart 2018 reported social distance (depression) and social distance (social anxiety), whilst Reavley 2018 reported social distance (depression) and social distance (PTSD). Morgan 2019 reported this outcome using a social distance scale and a psychosis vignette.

Post-intervention: We report the social distance (depression) outcome as this outcome was reported by both Hart 2018 and Reavley 2018 at this time point. Meta-analysis indicated that MHFA training may be more effective than physical first aid training in improving the stigmatising attitudes towards mental health in MHFA trainees (SMD -0.21, 95% CI -0.32 to -0.10; 2 studies; 1400 participants; Analysis 3.4).

One year plus: There was heterogeneity in the measures used by Morgan 2019 and Reavley 2018 at this time point. Morgan 2019 showed a negligible difference between MHFA and PFA for this outcome (MD -0.10, 95% CI -0.31 to 0.11; 146 participants) using a social distance scale based on a psychosis vignette. Reavley 2018 used a social distance scale based on a depression vignette (RR 1.04, 95% CI 0.93 to 1.18; 242 participants) and a PTSD vignette (RR 0.98, 95% CI 0.78 to 1.24; 237 participants); neither measure showed a significant difference, but the confidence intervals were wide and encompassed both positive and negative effects.

3.8 Self-reported contacts, or help provided to people with a mental health problem, since training

Reavley 2018 was the only study to report this outcome. The authors reported data on whether participants had tried to help someone with a mental health problem with whom they had been in contact. They provided data relating to people in the workplace, and to people outside of work. We report the result for people in the workplace, as this was a workplace intervention. Data were reported at one-year and two-year follow-up. We report the two-year follow-up as previously explained; little to no difference was shown (RR 1.04, 95% CI 0.88 to 1.24; 104 participants), but the confidence intervals were wide and encompassed both positive and negative effects.

3.9 Mental health and well-being of trainees

Four studies (Hart 2018, Morgan 2019, Reavley 2018; Suzuki 2014) reported this outcome. Suzuki 2014 reported the SF -8 scale at post-intervention, and at one and three months. Morgan 2019 reported the K6 scale at one-year, two-year and three-year follow-up, dichotomised to show the proportion of participants with high levels of psychological distress. Hart 2018 and Reavley 2018 also reported the K6 scale at one year: Hart 2018 reported both the dichotomous outcome of reliable deterioration in K6 score and the continuous outcome of mean score on the scale. Reavley 2018 also reported the continuous outcome of mean score. Suzuki 2014 did not report any data at post-intervention, but the authors note that 'there was no difference in change in QOL between the two groups at any time point in either the physical or mental domain on the SF-8'. Change from baseline data are reported at three months: the point estimate was MD 1.15, 95% CI -3.30 to 5.60; 38 participants).

One year plus: Hart 2018 reported the proportion of participants whose K6 score deteriorated reliably (RR 1.03, 95% CI 0.71 to 1.51; 803 participants). Morgan 2019 reported the proportion of participants who reported high levels of psychological stress, also measured with the K6 scale. Hart 2018 and Reavley 2018 reported mean scores on the K6 scales for each group. We have combined the dichotomous outcome from Morgan 2019 with the mean scores from Hart 2018 and Reavley 2018 to give a pooled estimate of SMD -0.07, 95% CI -0.20 to 0.05 (3 studies; 1, 088 participants; Analysis 3.5), showing a negligible effect, and the confidence intervals encompassed both positive and negative effects.

3.10 Absenteeism, productivity and cost-effectiveness

These outcomes were not measured in any study.

Subgroup analyses

Due to the small number of studies included in each meta-analysis, we did not construct subgroup analyses.

Sensitivity analysis

1. Excluding studies at high risk of bias or with some concerns over risk of bias in the measurement of the outcome domain

We had planned to conduct a sensitivity analysis where we would exclude studies with inadequate assessor blinding. However, we changed our plans to use the Risk of Bias 2 tool in which the relevant domain is bias in measurement of the outcome. It was not possible to do this as all the meta-analyses contained either only studies at low risk of bias, or only studies at high risk of bias for this domain.

2. Excluding studies at high risk of bias or with some concerns over risk of bias in the missing outcome data domain

We planned to conduct a sensitivity analysis by excluding studies at high risk of bias or with some concerns over risk of bias in the missing outcome data domain in each of our meta-analyses. However, it was not possible to conduct this analysis as the included studies were all at high risk of bias or some concerns over risk of bias for this domain for all analyses, apart from Analysis 1.2. Excluding the study at high risk of bias for this domain made no significant difference to the result.

3. Excluding studies at high risk or with some concerns of researcher allegiance bias

We did not examine this possible source of bias formally. We had originally planned to use the Risk of Bias 1 tool which allows for such assessments to be made. However, we changed the protocol to mandate the use of the improved tool: Risk of Bias 2 tool.

4. Using a fixed-effect model instead of a random-effects model

We conducted sensitivity analyses using a fixed-effect rather than random-effects model. Outcomes where the effect size changed are displayed in Table 2. For all other outcomes not reported, the effect size remained the same.

Using a fixed-effect rather than a random-effects model did not change the effect estimates for the majority of outcomes. For a few, there was an improvement in the precision of the estimate resulting in narrower confidence intervals. There were several outcomes for which the confidence intervals narrowed sufficiently to exclude the line of no effect, including the primary outcome of recipient mental health at six months to a year. These outcomes were all in the MHFA training versus no intervention comparison. However, the considerable heterogeneity in these analyses means that the random-effects model is the most appropriate.

DISCUSSION

Summary of main results

This review aimed to assess the current evidence for Mental Health First Aid training (MHFA). The primary objective was to examine mental health and well-being, mental health service use and adverse effects of MHFA training on individuals in the wider community. Secondary objectives included examining additional effects on individuals (knowledge and attitudes), effects on the trainees themselves (knowledge and attitudes, contact with people with mental health problems, their own psychological wellbeing) and organisational effects (absenteeism and productivity).
Twenty-one studies were included in the review. The studies were conducted in a wide variety of settings; there was also substantial variation in the nature of the MHFA intervention.

Our first comparison was MHFA training versus no intervention or wait-list control; we included 15 studies in this comparison. Only 12 studies contributed data (Burns 2017; Davies 2018; Hung 2021; Jorm 2004; Jorm 2010a; Jorm 2010b; Kidger 2016; Kidger 2021; Kitchener 2004; Lipson 2014; Reavley 2014; Svensson 2014). In terms of the primary outcome at our primary time point, the evidence was very uncertain about the effect of MHFA training on the mental health of individuals in the wider community; see Summary of findings 1. This was also true for this outcome at the one-year plus time point. We were only able to produce meta-

analyses for these two time points. Only one study measured mental health service use and found no difference between the MHFA training and a control condition. No study measured adverse effects in an appropriate format for this review.

In terms of secondary outcomes at our primary time point, there was mixed evidence of the effect on individual knowledge about mental health and there was little to no difference in reducing mental health stigma. There was evidence of a possible positive effect on trainee knowledge and in reducing stigma. There was evidence that MHFA training may result in increased contact with people with mental health problems by trainees and possible improvement in trainee mental health.

Our second comparison was MHFA training versus alternative mental health literacy interventions; we included two studies in this comparison. Only one study contributed data (Moll 2018). However, this study did not measure outcomes in individuals in the wider community and only assessed the impact of the interventions on trainees. It also did not measure outcomes at our primary time point of six months to a year. See Summary of findings 2

Our third comparison was MHFA training versus alternative interventions; we included four studies in this comparison. Only three studies contributed data (Hart 2018; Morgan 2019; Reavley 2018). However, these studies did not measure outcomes at our primary time point of six months to a year. See Summary of findings 3.

We were not able to carry out our planned subgroup analyses as there were too few studies in each meta-analyses. We were only able to undertake sensitivity analyses by comparing random-effects with fixed-effect models and in most cases, the effect estimate remained the same.

Overall completeness and applicability of evidence

There were few studies that measured the primary outcomes for this review. There is, therefore, necessarily limited applicability of the evidence to these outcomes. Few studies measured similar outcomes at sufficiently similar time points, making it difficult to provide pooled estimates of the effectiveness of MHFA training. There was also substantial variability in the populations and settings of the studies. It is plausible that the effects may differ by population and setting, but the limited number of studies made it difficult to examine this.

Quality of the evidence

Risk of bias

Biases related to the randomisation process were rated as low across most studies. Of the nine cluster-randomised studies, four were rated as at high risk of bias on the item rating the timing of identification or recruitment of individual participants relative to the timing of randomisation. There were concerns about bias related to deviations from the intended intervention. In some cases, high levels of participation that may not reflect usual practice led to the rating of bias. It could be argued that this is better seen as a problem of generalisability rather than bias, but, however viewed, the high levels of participation in some studies is worthy of note when interpreting the findings. More than half of the outcomes assessed were rated as at high risk of bias because of missing data. Concerns included high rates of missing data at follow-up, differential attrition and limited use of statistical methods to manage these problems. The assessment of bias related to measurement of the outcome suggested that assessors were blinded where blinding was possible (knowledge-related outcomes). However, other outcomes, where participants were their own outcome-assessor, were rated at high risk of bias. This was because participants were aware of which intervention they had received and may respond in a biased way. For the majority of the outcomes there were no major concerns about bias related to selective reporting.

Imprecision

Imprecision of effect estimates was a serious limitation for the certainty of the evidence in this review. The majority of the effect estimates were affected by serious or very serious imprecision. This was due to inadequate numbers of participants contributing data to the meta-analyses, and one of the reasons for this was the heterogeneity of outcome measures that could not be combined.

Heterogeneity

The variety of participants, settings and MHFA interventions investigated contributed to the statistical heterogeneity seen in the meta-analyses.

Indirectness

MHFA training has been studied in a variety of different settings (e.g. schools, tertiary education, workplaces, clinical settings) and in a variety of different formats (e.g. face-to-face training, online learning). Indirectness is likely to be a problem when trying to interpret this evidence in relation to all the different ways in which MHFA training is implemented in practice.

Publication bias

Due to our extensive search, and due to the fact that various organisations assiduously track MHFA research, we are reasonably confident that we have not missed any unpublished or ongoing MHFA studies.

Potential biases in the review process

As mentioned in the Methods section, it was necessary to convert continuous data to dichotomous data (and vice-versa) for several of the analyses. These calculations rely on certain assumptions about the data and thus there is some uncertainty associated with these.

As above, our search strategy was as comprehensive and wide-ranging as possible. Given the breadth of our search, we are reasonably confident that we have not missed any additional randomised controlled trials (RCTs). Furthermore, we have accessed the records of various organisations, including MHFA Australia, where information about completed and ongoing studies are publicly available.

We were unable to perform double independent data extraction and risk of bias assessment. However, all of these elements of the review were thoroughly checked and reviewed by members of the author team.

Agreements and disagreements with other studies or reviews

We are aware of three other systematic reviews and/or meta-analyses examining the effects of MHFA training.

Hadlaczky 2014 found moderate to small effects of MHFA training on knowledge and attitudes. However, the meta-analysis included only four studies that have been included in our review. The other 11 studies included were not RCTs.

Morgan 2018 included a total of 18 studies (5936 participants). Of these 18, 14 are also included in our review; the other four are not RCTs, but controlled trials. The individual meta-analyses included comparisons of MHFA training with various interventions, including wait list, other mental health literacy intervention and an alternative intervention, and so it is difficult to directly compare their effect estimates with those from our review. Generally speaking, our findings were similar in terms of trainee knowledge, with estimates showing small to moderate improvements, although confidence intervals often overlapped the line of no effect. Estimates for stigma in trainees across both reviews generally showed small improvements, again with confidence intervals often overlapping the line of no effect. Morgan 2018 also examined the mental health of trainees and of individuals in the wider population. Again the results of these estimates were imprecise in both reviews with small to negligible effects.

Maslowski 2019 included 16 studies, of which 11 were also included in our review. The other five studies were not RCTs, but controlled trials. Similar to Morgan 2018, the individual meta-analyses included comparisons of MHFA training with various interventions and so direct comparisons with our review are difficult. The review reported an overall moderate effect of MHFA on trainee knowledge and a small effect on attitudes, both of which were reasonably precise, with confidence intervals not overlapping the line of no effect. The differences between the two reviews in the studies included likely explain this difference. Results of estimates of improvements in the mental health of trainees and individuals in the wider community were similar, with imprecise estimates of small to negligible effects.

AUTHORS' CONCLUSIONS

Implications for practice

We can only draw uncertain conclusions about the effects of Mental Health First Aid (MHFA) training on our primary outcomes due to the lack of good quality evidence. This is the case whether MHFA is compared to no intervention, to an alternative mental health literacy intervention or to an active control. Studies are at high risk of bias and often not sufficiently large to be able to detect differences. Meta-analysis is difficult as studies report a variety of outcomes. For our secondary outcomes, we found some evidence of potential benefit for MHFA trainees on outcomes such as mental health knowledge and reducing stigma, however results were at high risk of bias and often imprecise.

Implications for research

Interventions for which there is no good evidence of effectiveness cannot necessarily be assumed to be safe or benign. Future research should systematically assess, monitor and report adverse effects. Studies should focus on measuring a core set of outcome measures which are relevant to recipients of the intervention and which can be measured objectively. As several effect estimates were affected by serious imprecision, we also recommend that future studies recruit enough participants to be able to demonstrate with certainty whether MHFA training is an effective intervention.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Burns 2017

Study characteristics	
Methods	**Study design**: two-armed randomised controlled trial **Study duration**: actual start and end date not reported. Individual participants were followed up for two months post intervention **Location**: Perth, Western Australia **Setting**: University
Participants	**Inclusion criteria**: first year undergraduate nursing students **No. randomised**: 181: 92 MHFA; 89 control **Age of participants:** MHFA: 18–24 years: 47 (79.6%), 25–30 years: 6 (10.2%), 31–35 years: 1 (1.7%), 36–40 years: 2 (3.4%), 41+ years: 3 (5.1%); Control: 18–24 years: 59 (72.8%), 25–30 years: 10 (12.3%), 31–35 years: 6 (7.4%), 36–40 years: 1 (1.2%), 41+ years: 5 (6%). **Gender (% female):** MHFA 86.4%; control: 81.5%

Burns 2017 *(Continued)*

	Race/ethnicity: not reported
Interventions	**Intervention:** MHFA course tailored for nursing students. Course comprised two face-to-face 6.5-hour sessions run over two days.The training included signs, symptoms and risk factors for common mental health problems, including depression, anxiety, substance use disorders, psychosis and eating disorders, and strategies to assist someone experiencing a number of mental health crises. All participants were provided the MHFA manual and standardised MHFA materials including specific materials designed for nurses. Course delivered by accredited MHFA facilitators. **Control:** Wait-list control. Once two month follow-up data had been collected, participants were offered the online version of the MHFA course
Outcomes	**Mental health knowledge:** knowledge questionnaire, vignette recognition (depression) **Mental health stigma:** total personal stigma towards a person with depression, total perceived stigma towards a person with depression, personal stigma (depression) measured by a social distance scale All outcomes measured in trainees only **Time points:** all outcomes measured at baseline, post intervention and two months post intervention **Outcomes not relevant to this review:** Mental health first aid intentions Confidence to assist someone with a mental health problem
Notes	**Funding:** 'This project was funded in part through a Seed Funding Research Grant from the School of Public Health, Curtin University' **Conflicts of interest:** 'The authors declare that they have no competing interests' **Researcher allegiance:** no allegiance to official MHFA bodies reported. We contacted the authors of this study and obtained further unpublished data.

Davies 2018

Study characteristics	
Methods	**Study design**: two-armed randomised controlled trial **Study duration**: October 2015 to December 2015. Individual participants were followed up for six weeks **Location**: UK **Setting**: University
Participants	**Inclusion criteria**: medical students in their first, second or third year of study No. **randomised**: 55: 27 MHFA group; 28 control **Age, mean (SD) years:** MHFA 20.3 (4.42); control 19.4 (1.25) **Gender (% female):** MHFA 66.7%; control 64.3% **Race/ethnicity:** not reported

Davies 2018 *(Continued)*

Interventions	**Intervention:** MHFA eLearning course. This appears to be the version developed specifically for medical students, which is mentioned in the Background. This consists of six modules delivered consecutively with content about specific mental health disorders and crises and the MHFA action plan. The course is delivered via text, images, audio, videos and interactive activities, and completed at the user's own pace over approximately six-eight hours. One of the authors made some adjustments to the materials (e.g. colloquialisms, available mental health services) to make it more appropriate for British medical students.The students also received a MHFA manual and a supplementary manual for medical students. Students received email reminders at two and four weeks **Control: n**o intervention
Outcomes	**Mental health knowledge**: knowledge questionnaire, vignette recognition (depression or social anxiety). The questionnaire was administered to the intervention group only and was not reported **Mental health stigma**: personal stigma towards a person with depression or social anxiety **Mental health contacts:** contact with a person with mental health problems and help offered to a person with mental health problems **Trainee mental health**: DASS (Depression, Anxiety and Stress) Scale All outcomes measured in trainees only **Time points**: all outcomes measured at baseline and six weeks post randomisation **Outcomes not relevant to this review:** Mental health first aid intentions Confidence in helping someone with a mental health problem
Notes	**Funding:** the research reported in this paper was supported by the NIHR MindTech Healthcare Technology Co-operative. The views represented are the views of the authors alone and do not necessarily represent the views of the Department of Health in England, NHS, or the National Institute for Health Research **Conflicts of interest:** 'the authors declare that they have no competing interests' **Researcher allegiance:** the authors state that "Thanks to MHFA Australia for providing access to the MHFA eLearning course, with particular thanks to Betty Kitchener, Nataly Bovopoulos, and Brendan O'Keefe for their support and help throughout the study. Finally, thanks to Anthony Jorm and Betty Kitchener for reviewing a draft of this manuscript" We contacted the authors of this study and obtained further unpublished data.

Hart 2018

Study characteristics	
Methods	**Study design**: crossover-cluster randomised controlled trial. Two arms. Four public schools were matched in two pairs and then randomised each to first receive one of the two interventions for all Year 10 students. In the subsequent calendar year the schools 'crossed over' to the other intervention and thus the new Year 10 cohort received the opposite intervention, giving eight cohorts. **Study duration:** surveys and interventions began in April 2014. However, the Trial Registry entry states that the first participant was enrolled on 2nd June 2014. The report states that surveys and interventions finished in October 2016. However the Trial Registry entry states that the date of last data collection was 17th August 2017. The Trial Registry also states that the last participant was enrolled 10th August 2016.

Hart 2018 *(Continued)*

	Location: Australia **Setting:** 4 schools
Participants	**Inclusion criteria**: students were from year 10 (aged 15–16 years). 'To be eligible, schools needed to be Government funded (rather than independent/private), agree to two consecutive cohorts of Year 10 students undertaking three survey sessions and three training sessions in regular class time, and agree to withhold any overlapping mental health classroom programmes until the completion of the research'. **Exclusion criteria**: was having provided a mental health intervention designed to increase mental health literacy or help seeking to the current Year 9 or 10 cohorts over the previous 2 years. **No. randomised**: 4 schools were randomised, which resulted in 8 year 10 cohorts (4 in each arm). In total 1,942 students were randomised: MHFA 989; control 953 **Age, mean (SD) years:** MHFA 15.82 years (0.51); control 15.92 years (0.52) **Gender (% female):** MHFA 43.94%; control 45.55% **Race/ethnicity of participants:** English as first language: MHFA 72.77%; control: 72.15%
Interventions	**Intervention (teen MHFA):** Three 75-minute sessions presented by trained instructors external to host school. Manualised curriculum. Students given programme booklet and completion certificate. Session 1 focused on mental health problems, Session 2 on helping a friend in a mental health crisis, and Session 3 on helping a friend who is developing a mental health problem. The action plan Look (look for warning signs), Ask (ask how they are), Listen (listen up), Help (help them connect with an adult) and Your Friend (your friendship is important) was taught. The course was delivered via PowerPoint presentation, videos, role-plays, group discussion, small group and workbook activities. The instructors completed at least 5.5 days of training. Youth MHFA course also offered to parents and teachers at participating schools **Control (Physical First Aid (PFA)):** Three 75-minute sessions presented by trained instructors external to host school. Manualised curriculum. Students given programme booklet and completion certificate. First session focused on the DRSABCD action plan (Danger, Response, Send for help/call 000, open Airway, check for Breathing, start CPR, attach Defibrillator (AED). Second and third sessions focused on basic first aid for a range of conditions. PFA training involved instructor introductions of topic content, role-plays using mannequins, bandages and splints and group discussions.PFA instructors underwent a minimum of 3 days training in first aid, plus an additional certificate-level course in Workplace Training and Assessment (8-week full-time equivalent; NRVET, 2017)
Outcomes	**Mental health knowledge:** vignette recognition (depression, social anxiety and suicidality (suicidality was also reported at 12 months in a subsequent paper), appropriate beliefs about treatment (depression and social anxiety) **Mental health stigma;** social distance scale (depression and social anxiety) **Adverse effects**: transient distress caused by MHFA or PFA training **Trainee mental health:** measured using the K6 scale at baseline and 12 months. This is reported in two different ways in two subsequent papers) All reported outcomes relate to trainees The authors of the 2018 paper report that they measured self-reported mental health status and psychological distress amongst recipients of MHFA, but the results are not reported as these were measured at 12 months and only post-intervention results are reported in the paper **Time points:** all outcomes were measured at baseline and post intervention **Outcomes not relevant to this review**

Hart 2018 *(Continued)*

	Quality of MHFA intentions Confidence in helping Three subscales of Depression Stigma Scale: weak not sick, dangerous/unpredictable, would not tell anyone: subscales only reported
Notes	**Funding:** 'This research was funded by a Mental Health Research grant awarded to the Authors by Australian Rotary Health and by a National Health and Medical Research Council Grant awarded to A.F.J. These sponsors had no role in the (1) study design; (2) the collection, analysis and interpretation of data; (3) the writing of the report and (4) the decision to submit the manuscript for publication' **Conflicts of interest:** 'Jorm is a Director on the Board of the not-for-profit organisation Mental Health First Aid Australia that provides Instructor Training to appropriately qualified individuals in how to present the teen Mental Health First Aid. Kelly is employed by Mental Health First Aid Australia as the Manager of Youth Programmes. Neither will financially benefit from the results of this research' **Researcher allegiance: as** above.

Hung 2021

Study characteristics	
Methods	**Study design**: two-armed randomised controlled trial **Study duration**: April 2017 to early 2018 **Location**: Hong Kong **Setting**: Tertiary institution
Participants	**Inclusion criteria**: students who (a) were at least 18 years of age, (b) were enrolled in an undergraduate general nursing programme, and (c) could understand both Chinese and English language material **No. randomised**: 358 **Age of participants:** MHFA: 20.80 ± 1.91; Control: 20.76 ± 1.91 **Gender :** MHFA: 36 (19.9%) M, 146 (80.1%) F; Control: 27 (15.3%) M, 149 (84.5%) F **Race/ethnicity:** not reported
Interventions	**MHFA** A programme for undergraduate general nursing students in improving their mental health literacy, decreasing their social distance from persons with mental health issues, increasing their mental health first-aid intention, and enhancing their confidence in assisting others. The programme was also extended the effectiveness to help students to maintain their own mental wellbeing. Delivered in small group interactive teaching sessions by certified MHFA instructors. 12-hour training programme: 4 x 3 hours sessions over a 1-month period. **Control** Wait list: MHFA training delivered after 6-month follow-up
Outcomes	**Mental health knowledge:** vignette recognition (depression); vignette recognition (schizophrenia); beliefs about treatment (depression); beliefs about treatment (schizophrenia); beliefs about helpful professionals (depression); beliefs about helpful professionals (schizophrenia)

Hung 2021 *(Continued)*

	Mental health stigma: social distance scale (depression); social distance scale (schizophrenia) **Mental health:** Chinese Health Questionnaire All outcomes measured in trainees only **Time points:** all outcomes measured at baseline, post intervention and six months post intervention **Outcomes not relevant to review** Confidence in ability to help MHFA action
Notes	**Funding:** Competitive Research Funding Schemes for Local Self-financing Degree Sector, Research Grants Council of the Hong Kong Special Administrative Region, China (<GN1>UGC/FDS17/H01/16<GN1>) **Conflicts of interest: "**We have no conflicts of interest to disclose" **Researcher allegiance:** no allegiance to official MHFA bodies reported

Jensen 2016

Study characteristics	
Methods	**Study design**: randomised controlled trial. Two arms. **Study duration**: start and finish date of the study not reported. The trial registry entry states that the study began in September 2013 and the primary completion date was January 2015. Individual participants were followed up for six months **Location**: Denmark **Setting:** t10different workplaces, including public, private and non-governmental organisations (NGOs). The Danish Prison and Probation Service, a Job Center in the municipality of Copenhagen, the telephone counseling of the Mental Health Foundation and Young Women's Christian Association (YWCA) also participated. The NGO ''SindUngdom'' and the public and voluntary organization ''Headspace'', both organizations for young people with mental health problems, also took part
Participants	**Inclusion criteria**: employees and volunteers who had contact with people during the course of their work **No. randomised**: 566: 290 MHFA group; 276 control **Age, mean (SD) years:** MHFA 43.42 (11.9); control 42.61 (12.4) **Gender (% female);** MHFA 84.6; control 82.8 (227) **Race/ethnicity:** not reported. However, the percentages of participants born in Denmark were MHFA 90.9%; control 92.3%. NB: 4 participants in the intervention group and 2 in the control group did not complete the baseline questionnaire
Interventions	**Intervention:** MHFA program translated and modified to suit the Danish context. The Danish Mental Health Foundation provided 41 training courses either at workplaces or at the Mental Health Foundation in Copenhagen. The course lasted two days for a total of 12 hours and was manualised.It was delivered by one or two instructors to groups of around 20 participants.

Jensen 2016 *(Continued)*

	The first-aid approach of the MHFA training course was taught in a five-step action plan: (1) assess risk of suicide and harm, (2) listen non-judgmentally, (3) give reassurance and information, (4) encourage individuals to get appropriate professional help, and (5) encourage self-help strategies. All steps were applied to the major categories of mental health disorders and crisis. Within all categories of disorders and crisis, participants were introduced to symptoms of the illness, possible risk factors, evidence-based treatment and where and how to get help. The training was based on exercises, knowledge presentations and discussions. It presented cases and involved the participants, who were encouraged to present examples from their own lives. The Australian founder of the program trained seven instructors all affiliated to the Mental Health Foundation in Denmark and all with experience in mental health work, most of the instructors being psychologists or social workers. These insights into training were later passed on to subsequent instructors. **Control:** Wait-list control. Participants received the MHFA training after the six-month follow-up.
Outcomes	**Mental health knowledge**: questionnaire on knowledge about depression and schizophrenia, vignette recognition (depression and schizophrenia) and appropriate beliefs about treatment (depression and schizophrenia) **Mental health stigma**: personal and perceived stigma (depression and schizophrenia) **Mental health contacts**: help offered to a person with a mental health problem **Time points**: all outcomes measured at baseline and six-month follow-up All outcomes measured in trainees only **Outcomes not relevant to review** Confidence in making contact with, talking to and helping a person with a mental health problem Willingness to become a neighbour, friend or colleague with the person in the vignettes (X), have X marry into the family: subscales of Stigma Scale
Notes	**Funding: '**This study was financially supported by the Danish foundation TrygFonden' **Conflicts of interest:** 'Co-author Per B. Vendsborg is an employee at the Mental Health Foundation in Denmark, the organization that implements and sells the MHFA training course. The other authors have no conflict of interests.' 'The implementation and performance of the MHFA training course was conducted by the Mental Health Foundation in Denmark' The protocol also states that 'all authors declare no financial relationships with any organizations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work' **Researcher allegiance:** as above

Jorm 2004

Study characteristics	
Methods	**Study design:** two-armed cluster-randomised controlled trial **Study duration**: recruitment took place in October and November 2002 and the study finished in October 2003. Individual participants were followed up for four months post intervention **Location:** Australia **Setting**: New South Wales Southern Area Health Service
Participants	**Inclusion criteria**: residents of the catchment area

Jorm 2004 *(Continued)*

	No. randomised: 16 clusters; 753 individuals. Eight clusters per arm, 416 MHFA; 337 control **Age, mean years:** MHFA 47.14 years; control 47.97 years. SDs not reported **Gender (% female):** MHFA 81%; control 83.1% **Race/ethnicity:** Aboriginal: MHFA 2.6%; control 3.0%, non-English speaking background: MHFA 1.2%; control 2.1%
Interventions	**Intervention:** nine-hour MHFA course, delivered in three weekly sessions of three hours each. Training delivered in local area in local community halls. Groups contained a maximum of 25 participants, with a minimum group size of 10. 'The course teaches how to help people in the crisis situations of being suicidal, having a panic attack, being exposed to a traumatic event, or in an acute psychotic state. The symptoms, risk factors and evidenced-based treatments (medical, psychological, alternative and self-help) for the mental disorders of anxiety, depressive and substance use and psychotic disorders are also taught.' Participants were taught the 5 step ALGEE process for delivering MHFA. Each session had a lesson plan and participants were given a manual to take away. Five educators recruited from the staff of the Southern Area Health Service. Each educator had 'experience in mental health work and also a background in training, working with communities or health promotion work'. Educators were trained over one week by Betty Kitchener, who devised the MHFA course. They received training materials and supervision. A co-ordinator 'monitored a sample of courses taught during the trial to assess fidelity to the lesson plans. A fidelity checklist of topics that had to be covered was developed for each session. Four of the instructors had all three course sessions checked, while one of the instructors only had two sessions checked. The percentage of topics covered correctly was 100% for four of the instructors and 81% for one of the instructors' **Control:** Wait-list control. Participants received MHFA training after follow-up assessments completed.
Outcomes	**Mental health knowledge**; vignette recognition (depression or schizophrenia) and appropriate beliefs about treatment (depression or schizophrenia) **Mental health stigma**; social distance scale **Mental health contacts**; contact with people with a mental health problem and help offered to a person with a mental health problem **Mental health**; whether they had experienced a mental health problem All outcomes measured in trainees only **Time points**: all outcomes measured at baseline and four-month follow-up **Outcomes not relevant to review** Whether there were mental health problems in a trainee's family Advised professional help to a person with a mental health problem Mental health first aid intentions Confidence in providing help Adverse effects not reported. However, authors note that 'Given that an educational intervention was evaluated with a non-clinical sample, there was no justification for a systematic enquiry into adverse events. Informally, no adverse events were reported'
Notes	**Funding:** 'Funding was provided by the Health Promotion Demonstration Research Grants Scheme from the New South Wales Department of Health, a National Health and Medical Research Council Research Fellowship and Program Grant, and a grant from ACT Health and Community Care'

Jorm 2004 *(Continued)*

	Conflicts of interest: 'BAK and AFJ were the developers of the Mental Health First Aid course'
	Researcher allegiance: as above

Jorm 2010a

Study characteristics	
Methods	**Study design**: three-armed, randomised controlled trial **Study duration**: recruitment took place between June 2008 and April 2009. Individual participants were followed up for six months **Location:** Australia **Setting:** general community
Participants	**Inclusion criteria**: adults **No. randomised**: 262; MHFA-CD 90; MHFA manual 88; control 84 **Age, mean (SD) years:** total group 40 (12) **Gender (% female):** total group 81% **Race/ethnicity of participants (not reported by group):** Australian citizens: 91%; English as first language: 88% When participants were classified for remoteness according to the Australian Standard Geographical Classification, 79% lived in major cities, 18% in regional areas and 3% in remote areas.
Interventions	**CD Intervention:** MHFA eLearning CD. The MHFA e-learning CD teaches members of the general public to recognise the early signs of mental illness and to provide initial help to a person developing a mental disorder or in a mental health crisis situation. It contains detailed action plans which cover: depression, anxiety disorders, psychosis and substance use disorders, and interactive case studies for each. The action plans incorporate five basic actions, as follows: Assess risk of suicide or harm, Listen non-judgementally, Give reassurance and relevant information, Encourage appropriate professional help, Encourage self-help strategies (ALGEE). In addition, the CD contains case studies applying the action plan; a 25 question knowledge quiz (at the start and completion of the CD) to gauge skills learned; videos depicting real stories of anxiety disorder, depression, bipolar disorder and schizophrenia; interactive exercises (e.g. illustrating the various manifestations of anxiety); self-assessment of symptoms (e.g. anxiety symptoms, alcohol use); and links to online resources. Participants receiving this intervention were sent weekly emails for a month to help pace them through the CD. This gave them 4 weeks to work though the material. **Manual intervention:** MHFA Manual. Authors state that 'the MHFA manual has the same content as the e-learning CD, but without the video clips and interactive case studies. It contains written action plans for depression, anxiety disorders, psychosis and substance use disorders, and printed forms of an alcohol use questionnaire and an anxiety symptom scale. References and links to printed and online resources are included. A free PDF of the manual can be downloaded from www.mhfa.com.au'. Participants receiving this intervention were sent weekly emails for a month to help pace them through the manual. This gave them 4 weeks to work though the material. **Control:** Waitlist control. After the trial was completed, participants were sent the intervention materials they had not been randomly assigned to receive. Participants who were assigned to the e-learning CD were sent the manual and those who were assigned to the manual were sent the e-learning CD. Participants assigned to the waiting list received both the CD and manual after completing the six-month follow-up questionnaire.

Jorm 2010a *(Continued)*

Outcomes	**Mental health knowledge**; vignette recognition (depression and schizophrenia) and appropriate beliefs about treatment (depression and schizophrenia) **Mental health stigma;** personal stigma towards a person with depression, perceived stigma towards a person with depression, personal stigma towards a person with schizophrenia, perceived stigma towards a person with schizophrenia, social distance towards a person with depression and social distance towards a person with schizophrenia **Mental health contacts;** contact with people with a mental health problem **Mental health**: Kessler Psychological Distress Scale (K10) All outcomes measured in trainees only **Time points**: all outcomes measured at baseline, post-intervention and six month follow-up **Outcomes not relevant to review: c**onfidence in providing help to a person with depression and to a person with schizophrenia First aid actions taken Adverse effects not reported. However, authors note that 'Given that an educational intervention was evaluated with a non-clinical sample, there was no justification for a systematic enquiry into adverse events. Informally, no adverse events were reported'
Notes	**Funding:** 'Funding was provided by Australian Rotary Health, a National Health and Medical Research Council Fellowship, and the Colonial Foundation. The development of the e-learning course was supported by funding from the Australian Department of Employment and Workplace Relations. The authors alone are responsible for the content and writing of the paper' **Conflicts of interest: '**Betty Kitchener and Anthony Jorm are developers of the Mental Health First Aid training programme' **Researcher allegiance:** as above

Jorm 2010b

Study characteristics	
Methods	**Study design**: two-armed, cluster randomised controlled trial **Study duration**: first participant enrolled 8th October 2007. Last participant enrolled 18th December 2007. Training carried out in Terms 1 & 2 2008 (intervention schools) and Terms 3 & 4 2008 (control schools). Individual participants were followed up for six months **Location**: Australia **Setting**: schools in government, Catholic or independent systems
Participants	**Inclusion criteria**: teachers and students in South Australia. Students were from Years 8-10 (12–15 years). Only students whose parents gave consent completed questionnaires **Clusters**: 16 schools (clusters) randomised (8 intervention, 8 control) **No. randomised:** 423 teachers, 1,633 students: MHFA 982; control 651 **No. analysed**: MHFA 221; control 106 (57 teachers did not complete the baseline questionnaire and were excluded. Furthermore, 2 clusters were lost: 1 intervention cluster (12 individuals) and 1 control cluster (27 individuals) **Age (years);** not reported for teachers;

Jorm 2010b *(Continued)*

	Age (% in age group): students 12 years: MHFA 7.7; controls 5.6 13 years: MHFA 37.4; control 39.9 14 years: MHFA 32.7; control 34.3 15 years: MHFA 22.2; control 20.3 **Gender, teachers (% female):** MHFA 64.7; control 66.0 **Gender, students (% female):** MHFA 53.8; control 54.4 **Race/ethnicity:** not reported
Interventions	**Intervention:** modified version of the Youth Mental Health First Aid course. It is described as a 'modified and shortened version of the Youth Mental Health First Aid course to make it suitable for high school teachers'. The authors state that 'the course was organised into two one-day parts of seven hours each. Part 1 was designed for all education staff and covered departmental policy on mental health issues, common mental disorders in adolescents (depressive and anxiety disorders, suicidal thoughts and behaviours, and non-suicidal self-injury) and how to apply the mental health action plan to help a student with such a problem. Part 2 was for teachers who had a particular responsibility for student welfare. It provided information about first aid approaches for crises that require a more comprehensive response and information about responses for less common mental health problems. Topics included how to give initial help to students who are experiencing a psychotic or eating disorder or substance misuse. Training was administered at the participants' school, with all available staff participating.' Documentation included lesson plans, the Youth MHFA manual and mental health fact sheets. Additional material was added by staff of the Department of Education and Children's Services. 'Each course was conducted by two instructors, one from the Department of Education and Children's Services and the other from the Child and Adolescent Mental Health Service. These instructors received a one-week training program in how to conduct this modified Youth Mental Health First Aid course. They were trained by two experienced trainers, including Betty Kitchener who devised the Mental Health First Aid course' **Control:** Wait-list controls
Outcomes	**Outcomes for students (recipients)** **Mental health**: Strengths and Difficulties Questionnaire (SDQ). Scores dichotomised at the 'abnormal' and 'borderline-abnormal' level. **Mental health knowledge**: vignette recognition (depression) and appropriate beliefs about helpfulness of people/services (depression) **Outcomes for teachers (trainees):** **Mental health knowledge;** knowledge questionnaire, vignette recognition (depression) and appropriate beliefs about treatment (depression) **Mental health contacts**; help provided to students, help provided to colleagues **Mental health**; psychological distress (K6 scale)) Outcomes measured in both students (recipients of MHFA) and teachers (trainees) **Time points**; **baseline, post-intervention and six months** **Outcomes not relevant to review:** Students: intentions about where to seek help for depression Students: information received from teachers

Jorm 2010b *(Continued)*

	Students: contact with staff member over previous month about mental health problems Teachers: confidence in providing help Teachers: intentions to provide help School practices and policies Students: subscales of SDQ Questionnaire Students: personal and perceived stigma. No overall score reported Teachers: personal and perceived stigma. No overall score reported Adverse effects not reported. However, authors note that 'Given that an educational intervention was evaluated with a non-clinical sample, there was no justification for a systematic enquiry into adverse events. Informally, no adverse events were reported'
Notes	**Subgroups measured: t**eachers with varying levels of psychological distress at baseline. Teachers who only completed one day of training versus teachers who completed both days. This appears to only be reported narratively in the text as 'The teachers who did two days of training showed greater gains in knowledge than those who did only one day, but the difference was not significant'. Students with worse mental health (above the cut-off on the Strengths and Difficulties Questionnaire) at baseline **Subgroups reported: t**eachers with varying levels of psychological distress at baseline. Students with worse mental health (above the cut-off on the Strengths and Difficulties Questionnaire) at baseline The authors also report a supplementary analysis including the two clusters that did not adhere to randomisation. **Funding:** Funding was provided by an Australian Research Council Linkage grant and from a National Health and Medical Research Council Fellowship **Conflicts of interest: '**Kitchener and Jorm are developers of the Mental Health First Aid Training Program' **Researcher allegiance:** as above We contacted the authors of this study and obtained further unpublished data.

Kidger 2016

Study characteristics	
Methods	**Study design**: two-armed, cluster randomised controlled trial **Study duration**: start date: April 2012. End date May 2015. Baseline questionnaires completed before allocation to study arm in June/July 2013 and follow-up measures completed in June/July 2014. However, training delivered and peer support services set up between September 2013 and January 2014. Therefore, follow-up measures taken at less than a year after intervention **Location**: UK **Setting**: schools

Kidger 2016 *(Continued)*

Participants	**Inclusion criteria**: staff and students in non-fee paying, mainstream secondary schools in three adjacent local authorities (English administrative areas). Letters originally sent to 32 schools, and when enough schools had responded representing a range of socioeconomic catchment areas, size and academic results, no further schools were followed up. Authors note that teachers are at a relatively high risk of common mental disorders. All teachers working in these schools were eligible. Students aged 12–14 years (Years 8 & 9) were eligible **No. randomised**: 6 schools (3 MHFA, 3 control), 1024 teachers (472 MHFA, 552 control) and 2,616 students (1,177 MHFA, 1,439 control) **Age**: not reported **Gender**: not reported **Race/ethnicity**: not reported
Interventions	**Intervention**: **Peer support service for staff**: All staff in the intervention schools were invited to nominate colleagues who would be suitable for the role of peer supporter via self-complete questionnaires. The 8–9 staff with the most nominations - ensuring a mix of teaching/support staff, gender and seniority – who consented to take part were trained in the full two-day adult MHFA course by a registered independent trainer (see www.mhfaengland.org), before setting up a confidential peer support service for colleagues. The standard MHFA course covers key facts, recognition and understanding of the most common mental disorders - depression, anxiety and psychosis – and provides attendees with a strategy for providing initial help to anyone appearing distressed or at risk of developing a mental health problem. The application of five steps known as ALGEE (Assess risk of suicide, Listen non-judgmentally, Give advice and information, Encourage professional help, Encourage self-help strategies) is a key part of this strategy that is referred to throughout the course. Once the training had been completed, guidance was provided by the research team regarding the purpose of the peer support service, confidentiality, and gaining support for themselves, but peer support teams were encouraged to develop the detail of the service themselves according to what was most appropriate for their particular school, for example how it was advertised, and how staff accessed the help. **Youth MHFA training:** the full two-day youth MHFA training was also delivered to up to 20 staff in each school, again by an external independent trainer. The school's senior leadership team had control over how this opportunity was advertised, and which staff attended. The content of the course is similar to the standard course, but focusses more specifically on facts, signs and symptoms of distress and mental disorders amongst teenagers, making use of case studies to illustrate the particular difficulties young people may face and consider helping strategies. After receiving the training, staff returned to their usual jobs and applied the training as required in their usual interactions with students **Control:** no intervention
Outcomes	**Outcomes for students (recipients):** **Mental health**: Strengths and Difficulties Questionnaire (SDQ) **Mental health wellbeing**: subjective and psychological wellbeing (WEMWBS) **Outcomes for staff (recipients and trainees):** **Mental health wellbeing**: subjective and psychological wellbeing (WEMWBS) **Mental health;** depression (PHQ-9) Only a small minority of staff were trained in MHFA and so these outcomes have been counted as recipient outcomes **Time points**: follow-up

Kidger 2016 *(Continued)*

Notes	Various outcomes measured in whole sample, but comparisons made between staff who received training with those who did not. Main outcomes also measured in teachers only as well as in all staff. **Funding: '**The research presented in this paper was funded by the National Institute for Health Research's School for Public Health Research (NIHR SPHR). The views expressed as those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health'. **Conflicts of interest: '**The authors declare that they have no competing interests'. **Researcher allegiance: '**Thanks to Anthony Jorm and Betty Kitchener for guidance and sharing measures used on previous studies to evaluate MHFA learning outcomes.This paper presents independent research funded by the National Institute for Health Research's School for Public Health Research (NIHR SPHR)'

Kidger 2021

Study characteristics	
Methods	**Study design**: cluster-randomised controlled trial **Study duration**: May to July 2016 – baseline data collected; May to July 2018 – last follow-up data collection **Location**: South West England; Central South Wales/South East Wales **Setting**: School
Participants	**Inclusion criteria**: Proximity to research team. **Exclusion criteria:** schools were excluded if they were fee paying, alternative provision (that is provision for students unable to attend mainstream school, for example, due to learning or physical disability or because they have been excluded from mainstream education), WISE pilot study schools, participating in similar research studies, already delivering MHFA or other mental health training, or lacking data on proportion of students eligible for free school meals (FSMs) as a proxy measure for poverty. We also excluded schools within the same academy trust (governing body) and local authority as one that had already been recruited, to avoid risk of contamination. **No.randomised**: 25 schools: Average teacher cluster size in Intervention schools was 58.5. Average teacher cluster size in Control schools was 55.8. 1428 teachers (702 intervention group; 726 control group): 3,648 students (1,737 intervention group; 1,911 control group). NB: not all randomised teachers and students eligible, and not all completed baseline questionnaire. **Age of participants:** Not reported **Gender:Teachers** Intervention group: Male: 205 (37%) Control group: Male: 221 (36%) **Students** Intervention group: Male: 884 (49%) Control group: Male: 918 (47%) **Race/ethnicity: Teachers**

Kidger 2021 *(Continued)*

	Intervention group: White: 539 (97%) Control group: White: 591 (97%) **Students: Intervention Group** Ethnicity (%): White 1,448 (81%); Mixed 147 (8%); Asian or Asian British 91 (5%); Black or black British 78 (4%); Chinese 23 (1%) **Students: Control Group** Ethnicity (%): White 1,668 (85%); Mixed 147 (8%); Asian or Asian British 69 (4%); Black or black British 45 (2%); Chinese 24 (1%)
Interventions	**WISE Intervention** Intervention schools were provided with (i) MHFA training for 8% staff who then provided a confidential peer support service for colleagues. These staff were both teaching and non-teaching and were nominated by colleagues at baseline. This included the standard MHFA course, plus guidance on setting up the peer support service. MH-FA trainers provided the training during the working day (cover provided for teaching staff). The study team provided written guidance on setting up the peer support service and posters to advertise the service. (ii) MHFA for Schools and Colleges training for a further 8% teachers. These were teachers in pastoral roles who had not been nominated to be peer-supporters. This was delivered by MHFA trainers during in-service training time. and (iii) a 1-hour mental health awareness session for staff. All teachers were asked to attend and this was open to all staff. Training included facts about mental health and wellbeing in teachers and teenagers; the WISE intervention; What is mental health, stress bucket, five ways to wellbeing, steps to follow to support others; Local sources of support. This was delivered by MHFA trainers during standard meeting or training time. **Control** Schools allocated to the comparison group continued with usual practice in terms of teacher support and training. In England and Wales, there is no standard training package for teachers regarding mental health support, although schools are free to choose to pay for any such training that is available. Similarly, there is no standard mental health support available.
Outcomes	**Outcomes for students:** **Mental health**: Strengths and Difficulties Questionnaire (SDQ) **Mental health wellbeing**: subjective and psychological wellbeing (WEMWBS) **Student attendance** **Outcomes for staff:** **Mental health wellbeing**: subjective and psychological wellbeing (WEMWBS) **Mental health:** depression (PHQ-8) **Teacher absenteeism** **Other outcomes** **Adverse effects:** The authors state that "School contacts and those delivering the intervention (i.e. MHFA trainers, HSCs and those trained as peer supporters) were asked to contact the study team within 2 work-

Kidger 2021 *(Continued)*

	ing days if any untoward incident or adverse event (AE) occurred to a student or member of staff (1) as a direct result of taking part in the WISE study or (2) because of changes that had occurred in the school environment because of participation in the WISE trial (e.g. heightened awareness among staff of mental health problems, leading to inappropriate referrals to specialist help sources for 'normal' student behaviour). In these cases, study-specific AE/incident forms were completed, recording information on the event. Members of the research teams in Bristol and Cardiff were also required to complete a form about any incidents or AEs that they encountered during data collections. All AE/incident report forms were discussed with the principal investigator to assess seriousness and to explore causality. All AEs deemed to be 'serious' [i.e. a serious adverse event (SAE)] were to be reported to the sponsor within 24 hours. All AEs and SAEs not deemed to be related to the study were reported to the Trial Steering Committee at the next scheduled meeting. There were no SAEs reported that were suspected to be related to the intervention". However, these data were not included as outcomes of the study and were not included in the study reports. **Outcomes not relevant to this review:** Teacher presenteeism Teacher retirements and leaving Student attainment Process outcomes Cost of intervention
Notes	**Funding:** "This study was funded by the National Institute for Health Research's Public Health Research programme 13/164/06 (JK, WH, RE, RA, RC, TF, DG, SM) https://www.nihr.ac.uk/. The intervention costs were covered by Public Health England (JK, WH, RE, RA, RC, TF, DG, SM), Public Health Wales (JK, WH, RE, RA, RC, TF, DG, SM) and Bristol City Council (JK, WH, RE, RA, RC, TF, DG, SM). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript" **Conflicts of interest:** "The authors have declared that no competing interests exist." We contacted the authors of this study and obtained further unpublished data.

Kitchener 2004

Study characteristics	
Methods	**Study design**: two-armed, randomised controlled trial **Study duration**: Trial registry states that the trial started on 1st April 2003 and finished on 30th November 2003. However, paper states that first recruitment email sent in May 2002. Intervention group participants completed baseline questionnaires, received training and were followed up in the fifth month after intervention. Control group participants received training in month 6 **Location**: Australia **Setting**: 2 Australian government departments: Health and Ageing, and Family & Community Services
Participants	**Inclusion criteria**: employees of Government departments **No. randomised**: 301: 146 MHFA; 155 control **Age (not reported by group):** 18-39 years: 49.2%, 40-59 years: 50.2%, 60+ years: 0.7%

Kitchener 2004 *(Continued)*

	Gender (% female) (not reported by group): 78.1% **Race/ethnicity of participants:** Aboriginal: 1.3%, English not first language: 8.6%
Interventions	**Intervention:** MHFA Training. 'The Mental Health First Aid course consists of three weekly sessions of three hours each. The content covers helping people in mental health crises and/or in the early stages of mental health problems. The crisis situations covered included suicidal thoughts and behaviour, acute stress reaction, panic attacks and acute psychotic behaviour. The mental health problems discussed included depressive, anxiety and psychotic disorders. The co-morbidity with substance use disorders is also covered. Participants learn the symptoms of these disorders, possible risk factors, where and how to get help and evidence-based effective help'. All participants given a MHFA manual to keep. The training was classroom based and delivered in groups of 6-18. 'Participants did not necessarily stay in the same class, but moved between classes to complete the course as necessitated by their work schedule'. Betty Kitchener carried out all the training. She is the developer of the MHFA course. **Control:** Wait-list control. Control group received intervention in Month 6, after follow-up questionnaires had been completed.
Outcomes	**Mental health knowledge**; vignette recognition (depression and schizophrenia) and appropriate beliefs about treatment (depression and schizophrenia) **Mental health stigma**; social distance scale **Mental health contacts**: contact with people with a mental health problem and help offered to a person with a mental health problem) **Mental health**; SF-12 scale All outcomes measured in trainees only **Time points**: baseline and 5 month follow-up **Outcomes not relevant to review** History of mental health problems in self and family Confidence in providing help Social distance scale for individual vignettes Participant/family member/friend had problem like the one in the vignette SF-12: physical health Advised professional help Adverse effects not reported. However, authors note that 'Given that an educational intervention was evaluated with a non-clinical sample, there was no justification for a systematic enquiry into adverse events. Informally, no adverse events were reported'
Notes	**Funding:** not stated **Conflicts of interest:** 'The authors were the developers of the Mental Health First Aid course'. **Researcher allegiance:** as above

Lipson 2014

Study characteristics

Lipson 2014 *(Continued)*

Methods	**Study design:** two-armed, cluster-randomised controlled trial **Study duration**: trial registry entry states that the trial began in September 2009 and ended in May 2011. Surveys took place 2-3 months before and after MHFA training for both resident advisors (RAs) and residents **Location**: USA **Setting**: colleges in 19 states representing all four census regions in theUSA. All participating campuses offered free mental health services. This included some form of treatment for at least a few sessions. Campuses also had an effective triaging system, in case demand increased because of the intervention. The primary analyses include data from 19 campuses which included both intervention and control residences. The other 13 campuses included residences that were purely in the intervention or control condition. These 13 were used as a supplementary sample, to investigate whether there were spill over effects where there might be contamination between intervention and control on the same campus
Participants	**Inclusion criteria**: resident advisors (RAs) and residents in participating institutions. RAs were second-year and higher undergraduates and were all invited to participate in MHFA training. RAs and residents had to be over 18 years old and a random subset were invited to participate in the surveys **No. Analysed**: 553 RAs and 1,990 residents **Age of RAs, mean (SD) years:** MHFA 20.4 (1.3); control: 20.3 (1.2) **Age of residents, mean (SD) years**); MHFA 19.1 (1.5); control: 19.1 (1.6) **Gender of RAs (% female)**: MHFA 58.4; control: 56.4 **Gender of residents (% female)**: MHFA: 65.3; control: 62.5 **Race/ethnicity of RAs, (% white)**: MHFA 76.6; control: 72.5 **Race/ethnicity of Residents, (% white)**: MHFA 70.6; control: 72.5
Interventions	**Intervention:** MHFA Training. All RAs in intervention sites invited to participate in training.The 12-hour MHFA course 'comprising five modules, covering depression, anxiety, psychosis, substance abuse, and eating disorders. Each module includes information about signs and symptoms, appropriate responses, and interactive activities' The ALGEE five-step action plan also covered. The course lasted 12 hours and was delivered by 'instructors certified by the National Council on Behavioral Healthcare (only the National Council can certify trainers). Most of the instructors (10 of 14) were behavioral health clinicians'. MHFA was provided 'in addition to pre-existing mental health training provided by their schools' **Control:** No intervention. 'RAs in the control condition participated only in pre-existing trainings'
Outcomes	**Outcomes for residents (recipients)** **Mental health**; psychological distress (K6 scale) **Mental health stigma;** personal stigma **Campus-reported service utilisation**: (this outcome is only reported narratively). **Outcomes for RAs (trainees):** **Mental health knowledge;** self-reported mental health knowledge **Mental health stigma**; personal stigma) **Mental health contacts**; number of residents with whom they discussed mental health issues **Mental health;** psychological distress (K6 scale)

Lipson 2014 *(Continued)*

	Outcomes measured in both residents (recipients of MHFA) and RAs (trainees). **Time points:** all outcomes measured at 2–3 months before and after MHFA training. **Outcomes not relevant to review** Mental health service usage for residents (self-reported) Mental health knowledge for residents (self-reported mental health knowledge) Self-efficacy for RAs
Notes	**Funding:** 'The study was funded by a National Institutes of Health "Challenge Grant" grant under the American Recovery and Reinvestment Act (NIMH 1RC1MH089757-01).' **Conflicts of interest:** 'The authors report no potential, perceived, or real conflicts of interest. The first draft of this manuscript was written by S.K.L., who was funded by a graduate student research assistantship through the University of Michigan' **Researcher allegiance: '**The authors would like to thank the National Institutes of Health and the Western Interstate Commission for Higher Education for their support of this project'. We contacted the authors of this study and obtained further unpublished data.

Mak 2018

Study characteristics	
Methods	**Study design**: parallel randomised controlled trial **Study duration**: not reported **Location**: Hong Kong **Setting**: University hospital
Participants	**Inclusion criteria**: general nursing students, aged 18–25 years, in their third or final year of a four-year Bachelor of Nursing programme during their mental health clinical placements at Kwai Chung Hospital, Hong Kong **Age, mean (SD) years**: MHFA 22.4 (1.31); control: 22.1 (1.38) **Gender (% female**): MHFA 80; control: 83 **Race/ethnicity of participants:** 100% Chinese
Interventions	**Intervention:** Standard MHFA training provided by MHFA accredited instructors plus Usual Education Practice (described below). MHFA consisted of four-hour classes held over three weeks. Classroom teaching involves interactive group discussion with audio–visual case demonstration, group exercises and role-playing to help students learn practical mental health first-aid skills. Four modules (depression and suicide, anxiety disorders, substance abuse, and schizophrenia and psychosis) were split across the three-week programme **Control:** Usual Education Practice (UEP) is the 10-day clinical placement for students during their mental health nursing experience at KCH. Students are required to complete 80 hours of training and learn practical skills with their mentors in the areas of acute psychiatry, psychiatric rehabilitation and outreach units. Students are allocated to different psychiatric settings, such as the in-patient ward, outpatient unit, rehabilitation centre and community psychiatric nursing unit. Through real-life demonstrations and case studies, they learn about different types of mental illness and nurse–patient interactions in mental health nursing. At the end of the clinical practicum, students' clinical knowledge, skills, problem-solving ability and professional attitudes are assessed by their

Mak 2018 *(Continued)*

	clinical instructors based on the above subject areas, with an overall grade of satisfactory or unsatisfactory. Control participants were also offered the chance of being placed on a waiting list for an MHFA class
Outcomes	**Recognition of disorders**: depression and schizophrenia **Beliefs about treatment**: depression vignette and schizophrenia vignette **Stigmatising attitudes**; Siu Scale **Outcomes not relevant to the review** Help-related behaviours (MHFA intentions and confidence in providing help) All outcomes measured at baseline, post-intervention and at 6 months follow-up
Notes	**Funding:** funding was provided by the Kwai Chung Hospital, Hong Kong **Conflicts of interest:** none declared **Researcher allegiance:** not specified We attempted to obtain further data from the author

Moffitt 2014

Study characteristics	
Methods	**Study design:** three-armed, randomised controlled trial **Study duration**: start date not reported. Each intervention was delivered three times between May and June 2009. End date not reported. Participants were followed up post intervention. A three-month follow-up is mentioned, but not reported **Location**: UK **Setting**: Northumberland's Fire and Rescue service
Participants	**Inclusion criteria**: managers at Northumberland's Fire and Rescue service **No. randomised**: 176; it is not reported how many were randomised into each group **Age (not reported by group): '**The most common age group was 38–48 years (55%), then 49-59 and 27–37 years. No participants were in the 16-26, 60-70 or 70 years plus categories' **Gender (% female):** total 84 **Race/ethnicity of participants:** not reported
Interventions	**Intervention (Mental Health First Aid):** Courses included a maximum of 18 participants. MHFA is described as a '12-hour training programme designed to inform members of the public about the signs and symptoms of mental health problems and ways of supporting someone who is experiencing mental health difficulties' The aims are described as '1. "To preserve life where a person may be a danger to themselves or others. 2. To provide help to prevent the mental health problem developing into a more serious state. 3. To promote the recovery of good mental health. 4. To provide comfort to a person experiencing a mental health problem. 5. To raise awareness of mental health issues in the community. 6. To reduce stigma and discrimination."'. It is also described as being 'diagnostically led' and delivered by 'trained practitioners'. Each course ran for two days, running from 9.00 am until 4.30pm. The training was delivered on a face-to-face basis, using video clips, presentation slides and learning exercises

Moffitt 2014 *(Continued)*

	Intervention (Looking after Wellbeing at Work): Course included a maximum of 18 participants. This was a locally developed training course. It is described as being developed with the Fire Service in mind. 'The objectives are to: promote understanding of the influences on wellbeing at work; enable people to look after their own and others' wellbeing; increase awareness of the experience of mental health problems; and to promote positive approaches to others'. A literature review concluded that the training needed 5 key ingredients to be successful. These were '1. Focus on positive mental health and resilience as a way of introducing the topic. Mental health is not just about mental health problems. 2. Include people with experience of mental health problems in the design, delivery and review of programmes**.** Build empathy, understanding, notice the common human aspects and value difference. 3. Emphasise how social factors impact on our mental health and view biological differences within the social context. 4. Lay out the case for the preservation and promotion of mental health; include awareness of the law "education is not enough". 5. Challenge myths about mental health, particularly about dangerousness, work performance and recovery'. The course lasted for two days and ran from 9am to 4.30pm. Relevant case studies used. Course based on 'sharing experiences from the service users', 'presentation of evidence' 'learning exercises involving games and role-play'. The course was run by co-facilitators who were mostly experts by experience of mental health problems **Control (Leaflet Session):** A one-hour briefing session in which participants were invited to view and read over leaflets around stress, mental health and physical health. They were also able to speak to an assistant psychologist and a health trainer confidentially about any aspect of mental or physical health. This intervention mirrored much usual practice, with leaflet sessions generally seen as good practice for providing health education. The groups were also given the email address of the assistant psychologist should they have any queries after the briefing
Outcomes	**Mental health stigma:** attitudes towards a person with mental health problems (AMIQ Scale) **Mental health**: WEMWBS. This is mentioned in Robson 2010, but no results are reported All outcomes reported in trainees only **Time points**: baseline and post intervention **Outcomes not relevant to review:** Mental health knowledge: Knowledge and Efficacy about Mental Health Problems (KEMHP Scale). This combines the outcomes of mental health knowledge with a self-efficacy outcome Several other outcomes were measured, but were not included in the main results paper after a factor analysis was undertaken to identify a suitable factor. These were: Emotions towards people with mental health problems, Confidence in managing own stress and Beliefs about causes of mental health problems
Notes	**Funding:** not reported **Conflicts of interest:** not reported **Researcher allegiance:** not reported We obtained further data from the authors, but it was not used

Mohatt 2017

Study characteristics	
Methods	**Study design**: two-armed, cluster-randomised controlled trial **Study duration**: start and end date not reported. Baseline measures taken, and last follow-up was at 8 months

Mohatt 2017 *(Continued)*

	Location: USA **Setting**: 4 National Guard armouries
Participants	**Inclusion criteria**: Community First Responders (CFRs) within the armouries **Clusters**: 4 National Guard armouries (clusters) were randomised, two to each arm **No. randomised**: 176: 69 in the two MHFA clusters and 107 in the two control clusters **Age:** not reported **Gender:** not reported **Race/ethnicity of participants:** not reported
Interventions	**Intervention (Military MHFA (M-MHFA)):** Adapted from MHFA by an expert panel. 'The expert panel included subject-matter experts with specific knowledge of the military population, creating training curriculum, the existing MHFA program, and the landscape of military programs that provide support, training, and assistance to service members and their families' Relevant supplementary material added. Pilot training carried out. 'M-MHFA is designed to increase the system of laypeople (both military and civilian) ready to provide basic support and assistance to others with developing mental health problems' The training was delivered in a group setting and consisted of an eight-hour seminar delivered over one day by two instructors. The same lead trainer delivered all the training to improve consistency **Control:** No intervention
Outcomes	**Outcomes not relevant to review** Mental health knowledge: knowledge of mental health resources. This is not a measure of knowledge about mental health problems and was not validated. Mental health stigma. This was not measured by a validated scale Confidence in own ability to help people with mental health problems Attitudes towards mental health treatments Likelihood of using specific mental health practices Outcomes measured in MHFA trainees only **Time points**: all outcomes measured at baseline, post-intervention (intervention group only), four months and eight months
Notes	**Funding:** Research funded by 'a research grant that was awarded and administered by the U.S. Army Medical Research and Materiel Command (USAMRMC) and the Telemedicine and Advanced Technology Research Center (TATRC), at Fort Detrick, Maryland, under Contract Number W81XWH-10-2-0150' **Conflicts of interest:** not reported **Researcher allegiance:** not reported

Moll 2018

Study characteristics	
Methods	**Study design**: two-armed, randomised controlled trial

Moll 2018 *(Continued)*

	Study duration: Trial registry states that the study started in May 2014. Recruitment began in September 2014 and finished in October 2015. Trial registry states that the trial finished in March 2016. Last follow-up was at 3 months after program completion, which was 6 months after baseline **Location:** Canada **Setting**: 2 hospitals
Participants	**Inclusion criteria**: any full or part-time employee within the organization who was willing to be randomly assigned to 1 of the 2 interventions, and who agreed to attend the sessions outside of their work hours. A basic understanding of English was also needed to be able to participate' Individuals were excluded if they had prior training in either of the two educational approaches **No. randomised:** 192: 97 into the Beyond Silence; 95 into the MHFA (control) group **Age of participants:** 18-29 years: Beyond Silence: 14 (14.4%); control group:11 (11.6%) 30-39 years: Beyond Silence: 18 (18.6%); control group: 21 (22.1%) 40-49 years: Beyond Silence: 33 (34.0%); control group: 21 (22.1%) 50-59 years: Beyond Silence: 26 (26.8%); control group: 30 (31.6%) 60-69 years: Beyond Silence: 6 (6.2%); control group: 12 (12.6%) **Gender (% female):** Beyond Silence 87.6; control group: 89.5% **Race/ethnicity:** not reported
Interventions	**Intervention: Beyond Silence (BS):** This is described as 'a newly developed program, based on principles of contact-based education, designed to promote early intervention and support for workers with mental health issues'. Several programs were run and each 'consisted of six 2-hour, in-person sessions, alternating with 5 online sessions. The in person sessions were held every other week for a period of 3 months, and were designed to build on each other, starting with 'why mental health matters', then moving to skill building in identifying and reaching out for help, and reviewing potential resources. The online sessions were designed to complement and extend the in-person sessions, where participants could explore and comment on web-based resources'. Beyond Silence specifically developed for healthcare workers: 'The Beyond Silence program was developed by the primary author to address the unique educational and support needs of healthcare workers.' Furthermore, the program was deliverd by people who had experienced mental health issues: 'The contact-based education approach was devised on the premise that positive, voluntary contact over time with a person who has a stigmatised condition is the most effective way to reduce stigma and discrimination. As such, the programs are co-led by 'peer educators': healthcare workers who have personal experience with mental health or addictions issues and are trained to deliver the program'. The authors also note that 'a fidelity rating scale was developed to capture 17 key structural and content elements of the program delivery. The fidelity ratings were completed by an external evaluator during session 4 or 5, and all demonstrated over 80% compliance' **Control: Mental Health First Aid Training (MHFA):** Two full day sessions, scheduled one week apart. Twelve hours training in total. Authors state that 'The MHFA curriculum is a standardised, module-based program designed to teach participants how to recognise the early warning signs of common mental illnesses, how to provide initial help to someone in a mental health crisis, and how to support people who are developing mental health problems'. The authors have chosen this as a control group as they believe that it is not customised to the needs of the healthcare workforce and it 'may reinforce a medical viewpoint that could be problematic in a workplace context where employees should not be diagnosing or treating their colleagues'. Sessions were led by 'a certified MHFA trainer who was also an employee of the organization (but did not share personal experiences with mental health issues)'. The authors also note that 'fidelity to the program principles were monitored by Mental Health First Aid Canada, since this is part of their requirement for implementation'

Moll 2018 *(Continued)*

Outcomes	**Mental health stigma**: MHCC Opening Minds Scale for Healthcare Providers **Mental health contacts**: contact with person in need of mental health help, help provided, mental health first aid actions taken **Mental health knowledge**: mental health literacy All outcomes are measured in trainees only **Time points**: all outcomes reported at baseline, post-intervention and 3 months post-intervention (6 months post baseline) **Outcomes not relevant to review:** Intention to seek help (ATSPPHS) Confidence in providing help (does not appear to be reported in results paper) Mental Health: experience of mental health problems, service utilisation
Notes	**Funding:** The study was funded by the Ontario Mental Health Foundation **Conflicts of interest:** the authors declare that they have no competing interests **Researcher allegiance:** Beyond Silence intervention developed by lead author We contacted the authors of this study and obtained further unpublished data.

Morgan 2019

Study characteristics	
Methods	**Study design**: two-armed, randomised controlled trial **Study duration**: recruitment took place between October 2011 and March 2016. Trial registry entry gives anticipated date of last data collection as 30/04/2019. Parents and teenagers followed up for 2 years after baseline interviews **Location**: Australia **Setting**: the study was promoted to parents via newsletters and online communications in secondary schools, ads placed with community organisations (e.g. local libraries, sport centres) and community radio, and links from websites including a study Facebook page. Recruitment was via a website
Participants	**Inclusion criteria**: parents of an adolescent aged between 12 and 15 years. Participants were recruited as a dyad of parent plus one teenager per family **Exclusion criteria**: participants who had undertaken Standard or Youth MHFA or PFA training within the previous three years. **No. randomised**: Youth MHFA 201 dyads; Physical First Aid 183 dyads **Age of parents, mean (SD) years:** YMHFA: 45.2 years (5.54); PFA: 45.1 years (5.69) **Age of adolescents. mean (SD) years**: YMHA: 13.3 years (SD 1.11); PFA: 13.3 years (SD 1.08) **Gender of parents (% female)**: YMHFA: 89.4; PFA: 86.8 **Gender of adolescents (% female)**: YMHFA: 58.8; PFA: 52.0 **Race/ethnicity:** Not Aboriginal or Torres Strait Islander (%): Parents: YMHFA: 99.4; PFA: 98.7

Morgan 2019 *(Continued)*

Interventions	**Youth MHFA Training:** The aim of the intervention is to help parents to provide better support if their adolescent develops a mental health problem and to benefit adolescent mental health. The course teaches adults who care for or work with adolescents (those aged between 12 and 18 years, the skills needed to recognise the early signs of a mental health problem, e.g. depression, anxiety, psychosis, substance use problems or eating disorders; identify potential mental health-related crises, e.g. suicidal thoughts and behaviours, non-suicidal self-injury (sometimes called deliberate self-harm), panic attacks, traumatic events, severe psychotic states, acute effects of drug or alcohol use and aggressive behaviours, and assist adolescents to get appropriate professional help as early as possible. The course included a manual for participants. The course lasted for 14 hours in total, It was taught across 4 x 3.5hr sessions which were usually run over 2 consecutive days. It was taught by accredited YMHFA instructors. Groups ranged in size from 5-18. Training venues included those currently used by instructors for publicly run YMHFA courses or PFA training (e.g. Red Cross training centres, community centres or school halls). Both control and intervention courses were timetabled to coincide at the same venue in different rooms where possible, or within the same geographical area but at different venues, at similar times. A research assistant performed a fidelity content check for courses conducted by two YMHFA instructors. Each content section was scored 0–2 for not completed, partially completed, or fully completed. Instructor scores showed high fidelity to the course content (instructor 1 54/58, instructor 2 50/58) **Physical First Aid Training (PFA):** This was **c**hosen as the control condition as it teaches parents useful skills but was not expected to have any mental health benefit. Furthermore, it controls for non-specific training effects and allows for the long-term impact of the intervention to be examined. The 15-h PFA training (HLTAID003) teaches the knowledge and skills to sustain life, reduce pain and minimise the consequences of injury and illness until professional help arrives. It covers a range of topics, including cardiopulmonary resuscitation, drowning, anaphylaxis, airway obstruction, bleeding and wound care, head, neck and spinal injuries, poisoning, envenomation, seizure management, stroke and unconsciousness. The course iIncluded a manual for participants. The course lasted for 15 hours over two sessions and was taught by accredited PFA instructors. Groups ranged in size from 5-18. Training venues included those currently used by instructors for publicly run YMHFA courses or PFA training (e.g. Red Cross training centres, community centres or school halls). Both control and intervention courses were timetabled to coincide at the same venue in different rooms where possible, or within the same geographical area but at different venues, at similar times. Fidelity of delivery was not described
Outcomes	**Outcomes measured in parents (trainees)** **Mental health knowledge:** knowledge quiz **Mental health knowledge**: vignette recognition **Mental health stigma**: social distance scale, psychosis vignette **Own mental health:** K6 scale **Outcomes measured in adolescents (recipients):** **Mental health stigma**: social distance scale, psychosis vignette **Mental health**: SDQ questionnaire: parent report **Mental health**: SDQ questionnaire: child report **Mental health**: K6 scale Adverse events mentioned, but not systematically measured Outcomes were measured in parents and in adolescents **Time points**: all outcomes reported at baseline, 1-year follow-up, 2-year follow-up and 3-year follow-up **Outcomes not relevant to the review**

Morgan 2019 *(Continued)*

	Perceptions of parent support by adolescents with a mental health problem Quality of parent support towards adolescent (parent question) Stigma: Weak not sick (both adolescents and parents) Stigma: Dangerous/unpredictable (both adolescents and parents) Quality of MHFA intentions (parents) Confidence to help (parents) Quality of MHFA support (parents) Appropriate help-seeking for mental health problem (parents) Perceived general social support (adolescents) Intended help-seeking from parent (adolescents) Actual help-seeking from parents (adolescents) Help-seeking from a health professional (adolescents)
Notes	**Funding: t**he trial was funded by the National Health and Medical Research Council (APP1042772), which played no role in the design of the study, data collection, analysis, interpretation of data or writing of the manuscript. AJ (APP1059785), NR (APP1083394) and MY (APP1061744) are supported by National Health and Medical Research Council Fellowships. AM is supported by a C.R. Roper Fellowship. **Conflicts of interest:** 2019 paper states that CK, BK and AJ are the authors of the Youth MHFA course. CK is employed by MHFA International (trading as MHFA Australia) as the Manager of Youth Programs and BK and AJ are members of the Board of this organization. AM is currently acting as an Associate Editor for BMC Psychiatry. JF, NR, MY, SC and LH have no competing interests. 2020 paper states that CK, BK and AJ are the authors of the Youth MHFA course. CK is employed by MHFA International (trading as MHFA Australia) as the Director of Research and Curriculum, AJ is a member of the Board and BK a former CEO and member of the Board of this organization. AM, JF, NR, MY, and LH have no competing interests. **Researcher allegiance:** as above

Reavley 2014

Study characteristics	
Methods	**Study design**: two-armed, cluster-randomised controlled trial **Study duration**: early 2010 and December 2011, with baseline interviews taking place between March and May 2010 and final data collection in December 2011. Individual participants were therefore followed up for around 18 months post intervention **Location**: Australia **Setting**: University
Participants	**Inclusion criteria**: staff and students. Students had to be over 16 years of age and undertaking a course over 3 months in duration. They also had to be proficient in English **Clusters:Students:** 6 clusters (426 students) MHFA; 3 clusters (341 students) control **Staff:** 6 clusters (162 staff) MHFA and three clusters (255 staff) control, according to the CONSORT diagram giving a total of 417. However, the authors also state that they recruited and randomised 445 staff and that baseline interviews were carried out with 422 staff. They also state that staff who nominated themselves as regularly moving between intervention and control campuses (n=42) were excluded from the analyses. This left 380 staff (145 in the intervention group and 235 in the control group) at wave 1 (baseline) **Age, mean (SD) years: Students:** MHFA 24.89 (8.02); control 23.96 (8.89) **Staff:** MHFA 43.01 (11.45); control 45.12 (10.99)

Reavley 2014 *(Continued)*

	Gender (% female): Students: MHFA 69.3, control 52.5 **Staff:** MHFA 65.4; control 66.7 **Race/ethnicity of participants:** not reported, although amongst the students 73.7% of the intervention group were born in Australia, compared to 67.2% of the control group. Amongst the staff 74.7% of the intervention group were born in Australia, compared to 72.9% of the control group.
Interventions	**Intervention:** the intervention was called MindWise. This was a multifaceted intervention of which MHFA training was part. The intervention was aimed at both staff and students. It was designed to run over two academic years. There were several 'key messages' which the intervention was intended to impart: (1) depression and related disorders are common in young people; (2) there are recognisable signs of depression and related disorders in young people; (3) early help-seeking leads to better outcomes; (4) there are several sources of professional help available; (5) there are useful types of self-help available; and (6) there are helpful first aid actions that staff and peers can take. Other messages included information on safe consumption of alcohol and NHMRC guidelines for alcohol consumption (defined as no more than two drinks per day to reduce lifetime risk of harm, and no more than four drinks on any one occasion to reduce risk of injury arising from that occasion). These messages were delivered in a variety of different ways: website/Facebook pages, Twitter activities; fact sheets/booklets (primarily provided by beyondblue: the national depression initiative (http://www.beyondblue.org.au); emails to student email addresses; booklets; campus special events including stalls during orientation and at exam times (at which students were also offered the opportunity to complete online personalised feedback questionnaires about their alcohol consumption); posters on the back of campus toilet doors; student-designed projects (including awareness-raising events by youth work students); information on the electronic course information and notes delivery system; and mental health first aid (MHFA) training (http://www.mhfa.com.au) provided by staff of the student counselling service. The Trial Registry entry further specifies that 'Taking Care of Yourself and Your Family was mailed out to staff members, the e learning CD version of the 12 hour MHFA course was mailed out to interested parties and there were monthly emails to staff containing MindWise fact sheets. There were also MindWise coffee mugs with mental health message and MindWise showbags containing beyond blue materials and Victoria University services for students and staff, check your drinking quiz, pour a standard drink activity and self-care ideas activity **Control:** no intervention
Outcomes	**Mental health**: psychological distress (K6 Scale). Scores dichotomised using a cut-off ≥ 15 to assess moderate-to-high psychological distress. **Mental health knowledge**: vignette recognition (depression) and beliefs about helpfulness (depression vignette) **Mental health stigma**: social distance and stigma towards a person with depression **Time points**: all outcomes measured at Wave 1: baseline, Wave 2: between 4 and 11 months, Wave 3: between 16 and 23 months **Outcomes not relevant to review** Help -seeking actions taken if experienced a problem like the one in the vignette. Not measured by objective service records Mental Health help-seeking intentions MHFA Given. These measurements are taken in all the sample of students and not just those who may have taken an MHFA course Knowledge of NHMRC Guidelines Alcohol use Alcohol help-seeking intentions

Reavley 2014 *(Continued)*

	Perception of VU Support
Notes	Recruitment finished early due to recruitment difficulties: 767 students recruited against a target of 1,200; 445 staff recruited against a target of 1,200. **Funding:** funding for the study was provided by beyondblue and by the NHMRC Australia Fellowship awarded to AFJ **Conflicts of interest:** The authors declare that they have no competing interests **Researcher allegiance:** AFJ one of developers of MHFA course

Reavley 2018

Study characteristics	
Methods	**Study design**: parallel group randomised controlled trial **Study duration**: not reported **Location:** Australia **Setting:** public services
Participants	**Inclusion criteria**: employees aged 18 and over and did not hold a current certificate in either MHFA or PFA **Age, mean (SD) years:** e-learning MHFA 40.89 (11.30); blended MHFA 41.71 (10.93); PFA 41.08 (10.60). All groups: 41.2 (10.9). Male 43.3 (10.6); Female 40.5 (10.9). **Gender (% female):** e-learning MHFA 74.8; blended MHFA 71.1; PFA 76.2. All groups: Female = 74.1%. **Race/ethnicity of participants, Aboriginal or Torres Strait Islander**: e-learning MHFA 1%; blended MHFA 1.5%; PFA 1%. All groups: 1.2% were Aboriginal or Torres Strait Islander. **Married/Defacto:** e-learning MHFA: 61.1 %; blended MHFA: 66.8%; PFA: 68.1%. All groups: 65.4% . **Tertiary education**: e-learning MHFA: 63.6 %; blended MHFA: 64.8%; PFA: 69.5%. All groups: 66.1%.
Interventions	**Intervention 1:** a 6-hour eLearning MHFA course via MHFA Australia online portal The eLearning MHFA course comprised 5 modules which needed to be completed in sequence, with a quiz at the end of each: Introduction to mental health; Depression; Anxiety Problems; Psychosis and Substance Use Problems. Each module included interactive content on case studies (click on a picture or table to answer). The course also includes audio and video content depicting stories of lived experience and demonstrating how to provide mental health first aid, following by questions or other activities. The online content was tailored to incorporate information on resources and help-seeking pathways of specific relevance to the relevant public service (e.g. Employee Assistance Program (EAP) providers). An accompanying hard copy MHFA manual (which was regularly referred to in the eLearning course) was posted to participants when they registered for the course. Participants received weekly automated emails for 6 weeks to pace them through the material. Monthly reports were extracted to monitor course progress. On course completion, an automatic email was sent to the trial manager to flag completion and another was sent to the participant containing a link to the post-course questionnaire **Intervention 2:** as per 6-hour eLearning course above plus a plus a 4-hour face-to-face session, which reviewed the contents of the online course through quizzes and discussion. It also included case studies and role plays to give participants more experience in applying the MHFA Action Plan

Reavley 2018 *(Continued)*

	in different situations and settings. Group training was provided by MHFA instructors and completed within 3 months of online course completion **Control: a** 4-hour eLearning Apply First Aid course delivered via the Australian Red Cross online portal. The course teaches the fundamental principles, knowledge and skills to provide emergency care for injuries and illnesses in the home or the workplace. Participants received weekly emails for 6 weeks to pace them through the material. Reports from Red Cross were obtained to monitor course progress and flag course completers
Outcomes	**Mental health knowledge**: vignette recognition (depression and PTSD) and beliefs about helpfulness (depression and PTSD) **Mental health stigma**: social distance scale (depression and PTSD) **Trainee mental health**: K6 scale measured at 12 months **Contact with someone at work/someone outside of work with a mental health problem** **Help offered to someone at work/someone outside of work with a mental health problem** **Outcomes not relevant to review** Mental health first aid knowledge Two subscales of Personal Stigma Scale for depression and PTSD: weak not sick, dangerous/unpredictable subscales only reported Helping intentions and confidence Self-reported supportive behaviours Course satisfaction Trainees encouraged to contact trial manager to report any adverse events, but none were reported Experience of an MH problem over last 12 months and treatments sought
Notes	Only outcomes assessed at baseline and post training are reported in the original trial report. The authors state that data from the one and two- year follow-up questionnaires will be reported in a future publication as data collection is ongoing. The subsequent paper by Jorm et al reports the K6 score at 12 months. The Reavley 2021 paper reports outcomes at 1 and 2 years. **Funding:** From original article: The trial was funded by the National Health and Medical Research Council (APP1061636), which played no role in the design of the study, data collection, analysis, interpretation of data or writing of the manuscript. More information in Reavley 2021 article: AFJ is supported by National Health and Medical Research Council Investigator Grant. AM is supported by a University of Melbourne CR Roper Fellowship **Conflicts of interest:T**he authors declare that they have no competing interests **Researcher allegiance:** From original article: AFJ and BK are the co-founders of MHFA training and Chair of the Board of MHFA International. NB is the current CEO of MHFA International. More information in Reavley 2021 article: AFJ is a former Chair of the Board of MHFA International and BAK is a former member of the Board. BAK and NB are former CEOs of MHFA International. NJR, AJM and JF have no competing interests. We contacted the authors of this study and obtained further unpublished data.

Suzuki 2014

Study characteristics	
Methods	**Study design**: two-armed, cluster-randomised controlled trial **Study duration**: interventions were provided during the residents' psychiatric rotation from July 2009 to March 2010 and the last follow-up date is given in the trial registry entry as June 2010. However, the trial registry entry also states that the first enrollment was in August 2009. Individual participants were followed up for three months post intervention **Location**: Japan **Setting**: 5 institutions (Hokkaido University, Iwate Medical University, Keio University, Yokohama City University and Kyushu University
Participants	**Inclusion criteria**: second year medical residents on their psychiatric rotation during the study period **Clusters**: 2 MHFA (65 residents), 2 control (49 residents) **No. randomised**: MHFA 65, control 49 **Age mean(SD) years**: MHFA 27.5 (2.3), control: 28.3 (4.2) **Gender (% female)** MHFA 44.6, control 40.8 **Race/ethnicity of participants:** not reported
Interventions	**Intervention:** The intervention is described as a Gatekeeper Training Program. The program was 'developed by the research team based on the Mental Health First Aid (MHFA) programme implemented in Australia, which was originally developed for the general public'. The authors report that 'This programme was a 2-hour structured educational programme on managing people with depression and suicidal thoughts. Since the participants in this study were medical residents, the programme was condensed by minimizing the knowledge-based content of the lecture and including more experiential learning, an essential feature of the MHFA programme. To fit the Gatekeeper Training Program into the tightly arranged residency curriculum for medical residents, the only topic taught in the programme was depression and suicide, including current needs to respond to suicide prevention. With reference to the existing mental health first aid guidelines for Japan, the training covered the approaches which are universally endorsed, rather than taking a specific approach relevant only to Japanese culture' The authors further report that 'The first part of the programme presented, in lecture format, factual information on depression and suicide in Japan. Action plans for management of people with depression and suicidal thoughts were provided. In the second part, a clinical scenario was shown in a demonstration DVD in which a hospitalised patient with a physical problem and suicidal thoughts was referred to a physician at the bedside. The facilitator then prompted the participants to role-play the scene by taking on different roles of the patient, family member and medical staff. An interactive discussion that followed was facilitated by certified facilitators to address the questions and comments the participants raised'. **Control:** control group participants received the usual training program on depression and suicidality. The authors report that 'One of the researchers presented the usual training session, a didactic lecture on depression and suicidality, the contents of which were based on a standard psychiatric textbook'
Outcomes	**Mental health**: mental health related quality of life: SF-8 Mental Component Summary **Time points:** all outcomes measured in residents at baseline (T0), post intervention (T1), one month post intervention (T2) and three months post intervention (T3) **Outcomes not relevant to review:** SIRI Score: measures competency in managing people with depression and suicide

Suzuki 2014 *(Continued)*

	Confidence in managing suicidal people MOS QOL questionnaire: physical health
Notes	**Funding:** This research was fully supported by a Grant-in-Aid from the Japanese Ministry of Education, Culture, Science and Technology (JSPS KAKENHI Grant Number 22591296) **Conflicts of interest:** The authors have no conflicts of interest **Researcher allegiance:** The authors thank Professor Anthony Jorm and Ms Betty Kitchener of the University of Melbourne for their mentorship in Mental Health First Aid programme

Svensson 2014

Study characteristics	
Methods	**Study design**: two-armed, randomised controlled trial **Study duration**: actual start and end dates not given, but authors state that 'in 2010 the Ministry of Health and Social Affairs in Sweden decided to initiate a major pilot project in order to test and evaluate an implementation of MHFA in Sweden'. Two-year follow-up letters were sent in Spring and Autumn 2013 **Location**: Sweden **Setting**: social insurance agency, employment agencies, social services, schools, police departments, correctional treatment units, rescue services and recreation centres
Participants	**Inclusion criteria**: staff **No. randomised:** 406; MHFA 199; control 207 **Age, mean (SD) years:** MHFA 45.6 (10.7); control 45.6 10.3) **Gender (% female):** MHFA 75.9 ; control 78.3 **Race/ethnicity (% born in Sweden):** MHFA 88.4%; control 93.2
Interventions	**Intervention (MHFA):** The MHFA program adapted for the Swedish context. A team from Australia taught 3 Swedish instructors who in turn taught 18 instructors. These 18 instructors delivered the program. All the instructors had experience of mental health work in some form, such as health care staff and volunteers in user organisations. Course participants received the MHFA manual in Swedish. Participants completed the 12-hour training course over 2 days.Training was given at worksites or in local college localities in classes with a maximum of twenty participants **Control:** Wait-list control. Control group received training after 6 month follow-up
Outcomes	**Mental health knowledge**: questionnaire, beliefs about treatment (depression and schizophrenia vignettes), vignette recognition (depression and schizophrenia) **Mental health stigma**: personal and perceived stigma (depression and schizophrenia vignettes) **Mental health contacts:** help offered All outcomes measured in trainees only **Time points:** all outcomes reported at baseline and six months **Outcomes not relevant to the review:**

Svensson 2014 *(Continued)*

	Confidence in providing help Depression vignette: become a neighbour with X Depression vignette: become a friend with X Depression vignette: become a colleague with X Depression vignette: X married into family Schizophrenia vignette: become a neighbour with X Schizophrenia vignette: become a friend with X Schizophrenia vignette: become a colleague with X Schizophrenia vignette: X married into family
Notes	Two year follow-up not relevant as all participants (intervention and control) had completed the training at this stage. Results not reported by group. **Funding:** 'The study was funded by the Swedish Board of Health and Welfare, (www.social-styrelsen.se). **Conflicts of interest:** 'The authors have declared that no competing interests exist' **Researcher allegiance:** not reported We contacted the authors of this study and obtained further unpublished data.

DASS: Depression, Anxiety, and Stress Scale ; **ITT:** intention-to-treat; **K6:** Kessler Psychological Distress Scale; **KEMHP:** Knowledge and Efficacy about Mental Health Problems; **MHFA:** Mental Health First Aid; **MOS QOL:** Medical Outcomes Study Quality of Life; **n:** number**; PFA:** Physical First Aid; **PTSD:** post-traumatic stress disorder**; SD: s**tandard deviation; **SF-12:** Short Form Survey

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Aakre 2016	Not an RCT
Bond 2018	Not an RCT
Brandling 2010	Not an RCT
Coppens 2014	Not an RCT
Currie 2015	Not an RCT
Epstein	Not an RCT. Listed as ongoing on MHFA websites. Correspondence with author confirmed study is not randomised nor controlled.
Hashimoto 2016	Not an RCT
Massey 2014	Not an RCT
McCormack 2018	Not an RCT
Rose 2017	Not an RCT

Study	Reason for exclusion
Wong 2015	Not an RCT
Young 2016	Not an RCT

MHFA: Mental Health First Aid; **RCT:** randomised controlled trial

Characteristics of ongoing studies *[ordered by study ID]*

ACTRN12619000464167

Study name	Workplace Mental Wellbeing through Enhancing Mental Health Literacy and Improving Workplace Friendliness in Hong Kong: The WPMHL Project
Methods	Cluster-randomised controlled trial. Work sites are the clusters and therefore the primary unit of randomisation
Participants	**Inclusion criteria**: adults aged 18 years or older; working full time currently in any industries; receiving a payment in the form of salary or wages **Exclusion criteria**: individuals younger the age of 18 years; not working full time in the position; voluntary work without any payment; individuals who are employers and/or occupying a senior managerial position of the corporate/organisation
Interventions	**Intervention:**comprised of two main elements - an organisation-directed component and an individual-directed psychoeducation training. For the organisation-directed component, a workplace environment scan, using a standard protocol and the Moos's Work Environment Scale (WES), will be conducted by a social worker with expertise in workplace issues at the commencement of intervention program prior to the individual-directed component. Information will be gathered via a staff survey with a questionnaire specifically design for the project that also includes the WES, and some face-to-face interviews to gain a better insight into the local issues of each site. De-identified and aggregated information collected from the assessment will be provided to the management of each participating site with professional interpretation of the findings and possible strategies for resolving the identified issues will be offered. Site management is encouraged to make use of this information to improve the work environment during the intervention and follow-up period. For the individual-directed component, participating sites will adopt the well-studied evidence-based Workplace Mental Health First Aid (MHFA) with the inclusion of a module on stress reduction and burnout prevention. Adopting the e-Health and e-Learning approach, this is a blended training consisting of a series of self-paced online e-Learning modules. Through a series of 18 hours of online sessions, participants will acquire essential knowledge and understanding on the fundamental concepts before having face-to-face sessions. To provide some interaction time with the instructor, participants will attend 6-hour face-to-face sessions (in one day or two sessions) for hands-on practice. Upon completion of the full program and passing a standard quiz, a certificate will be issued to the participant for a qualification of a Mental Health First Aid Officer in accordance to the standard of the Mental Health First Aid, Australia (https://mhfa.com.au/mental-health-first-aid-officers). **Control**: normal practices in the workplace. The waitlist control group will be offered the intervention upon the completion of the program in the intervention arm (about 6 months after the commencement of the project).
Outcomes	Proportion of participants with an increased level of mental health literacy, assessed using the Jorm's standard MHL scale. Change in the stress scores assessed using the Depression, Anxiety, and Stress Scale (DASS) Change in the burnout assessed using the Maslach Burnout Inventory

ACTRN12619000464167 *(Continued)*

	All outcomes measured immediately post-intervention (6 months after the commencement of the program)
Starting date	First participant enroled 01/09/2019
Contact information	Professor Lawrence T Lam, University of Technology Sydney, Faculty of Health Email: lawrence.lam@uts.edu.au
Notes	**Funding source**: Health and Medical Research Fund, Food and Health Bureau, Hong Kong Government

ACTRN12621000756820

Study name	Effect of the Mental Health First Aid Conversations about Suicide course on intentions to assist a person at risk of suicide in Victorian Men's Sheds: a cluster randomised controlled trial
Methods	Cluster-randomised controlled trial
Participants	Male, member of a participating Men's Shed and agrees to participate in the study.
Interventions	**Intervention:** The Mental Health First Aid Conversations about Suicide (MHFA-CaS) course is a specialised four-hour course that teaches community members to recognise when someone is experiencing suicidal thoughts and provide them with appropriate support. Participants will learn how to identify warning signs for suicide, support a person in crisis, help a person at risk of suicide stay safe and connect someone to appropriate professional help. The curriculum has been developed by MHFA and is based on guidelines developed through the expert consensus of people with lived experience of mental health problems and professionals. The course will include the use of a handbook, PowerPoint slides, videos and offers role-play to practice help giving. The course will be delivered in Men's Sheds by instructors who are trained and accredited by MHFA Australia. It will be offered to approximately 15 participants per course group by online videoconferencing or face to face, depending on the preference of the local Men's Shed coordinator and Shed members. The face to face courses will be delivered at a suitable location within the local community, e.g. the Men's Shed or neighbourhood house. Each Men's Shed cluster will be offered one or two MHFA-CaS courses depending on the number of enrolments. The intervention group will receive the course between July 2021 and June 2023. The waitlist control group will receive the course between February 2022 and January 2024. There will be minor adaptations to the course to make it more suitable for older men. This will include tailoring of scenarios and the artwork to include male peers. **Control:** Waitlist control. The control group will receive the intervention after a waiting period of 7 months, during which registered participants will be asked to fill in three surveys at similar time intervals as the intervention group (baseline, 1 month and 7 months after baseline).
Outcomes	**Primary outcome: c**hange in intentions to assist a person who is at risk of suicide in response to a vignette used in previous studies (Jorm et al, 2018; Nicholas et al, 2020). Participants will be asked to indicate their likelihood of undertaking 15 helping actions. **Secondary outcomes** Changes in helping actions taken to assist a person who is at risk of suicide (based on Jorm et al, 2018; Nicholas et al, 2019). Participants will be asked to indicate whether they performed any of 15 helping actions to support someone in the last 6 months. Changes in confidence to assist a person who is at risk of suicide. Participants will be asked to rate how confident they would feel supporting the person depicted in a vignette (Nicholas at al, 2020). Changes in the endorsement of suicide prevention myths. Participants will be asked to indicate their agreement with items representing common suicide myths, the items will be based on previous research (Nicholas et al, 2020)

ACTRN12621000756820 *(Continued)*

	Changes in stigmatising attitudes about suicide, Participants will be asked to what extent they agree with statements designed to measure stigmatising attitudes. The stigma items will be based on the Depression Stigma Scale (Griffiths et al, 2004). Changes in the desire for social distance measured by the Social Distance Scale (Link et al, 1999). Changes in disclosure norms about suicide. Participants will be asked to what extent they agree with four statements adopted from other studies (LaMontagne et al, 2016; Martin, 2010). Changes in helping actions received in response to suicide risk (based on Nicholas et al., 2019). Participants will be asked to indicate whether they received any of 15 helping actions in response to suicide risk in the last 6 months. Changes in health related quality of life. Participants' health related quality of life will be measured using the brief version of the assessment of quality of life instrument (AQoL-4D; Hawthorne, Richardson & Osborne, 1999). Changes in mental health resource usage. Health care utilisation will be measured using adjusted items from the resource use questionnaire (RUQ; Chatterton, et al, 2018). Course quality and satisfaction. Five items will be used asking participants how new the information in the course was to them, how much of the information in the program they understood, how well the program was presented, how relevant the content was to them and how much they liked the different parts of the program (ie, handbook, PowerPoint slides, videos and activities). Additionally, two open-ended questions will ask participants what aspects of the course they find most helpful and if there is anything in the course that could be improved. This questionnaire was used in a previous MHFA study (Bond et al, 2021).
Starting date	14/07/2021
Contact information	nreavley@unimelb.edu.au
Notes	Anticipated date of last data collection: 31/12/2023

ACTRN12621001589875

Study name	Cluster-randomised controlled trial of secondary school student training in teen Mental Health First Aid 7-9 Edition 3 versus Red Cross Physical First Aid on ability to assist peers with a mental health problem, physical illness, injury or emergency.
Methods	Randomised controlled trial
Participants	The design of the study is a cluster randomised controlled trial, using schools as the cluster. All schools will receive either teen Mental Health First Aid or physical first aid.
Interventions	**Intervention** teen Mental Health First Aid The teen Mental Health First Aid (tMHFA) 7-9 Edition 3 is a redesigned course of MHFA Australia for students in Years 7-9 that has been developed with input from multiple curriculum specialists and student focus groups. tMHFA builds on the familiar first aid model and teaches students an easy to use and remember 5-step action plan for helping a friend with a mental health problem. The tMHFA program is designed to develop students' knowledge and skills in: - recognising warning signs that a friend is developing a mental health problem; - understanding how to talk to a friend about mental health and seeking help; - when and how to tell a responsible adult; - where to find appropriate and helpful resources about mental illness and professional help; and - how to respond in a crisis situation. tMHFA has been designed by experts in MHFA training and youth mental health. tMHFA contains a multimedia presentation, videos, a workbook and learning activities. The program is presented

ACTRN12621001589875 *(Continued)*	by Accredited MHFA Instructors who have specialist knowledge in youth mental health and experience working within schools. tMHFA involves delivery of 4 x 50-minute sessions. For this trial, tMHFA will be delivered to Year 8 students in regular school classes, in groups of 20-30 students, once a week, over a four-week period. Class attendance will be taken by supervising teachers and provided to researchers according to Unique student ID to maintain anonymity. **Control** Red Cross Let's Talk First Aid The Red Cross Let's Talk First Aid program is a non-accredited course, presented over 4 x 50-minute sessions, designed to equip adolescents with the skills to provide basic physical first aid to their peers. The program is designed to develop students' knowledge and skills in: - Chain of Survival - DRSABC - action plan - Recovery Position - CPR and defibrillation - Basic first aid for common injuries and emergencies such as sprains, strains, fractures, dislocations, concussions, asthma, anaphylaxis etc. The program is presented by an experienced first aid instructor from Australian Red Cross. Teaching sessions involve a multimedia presentation and practical demonstrations of techniques such as the recovery position and CPR. For this trial, Let's Talk First Aid will be delivered to Year 8 students in regular school class time, in groups of 20 to 30 students, once a week, over a four-week period. Class attendance will be taken by supervising teachers and provided to researchers according to Unique student ID to maintain anonymity.
Outcomes	The primary outcome of interest will be the quality of mental health first aid intentions **Secondary outcomes** Confidence in supporting a peer will be assessed by asking: "If you had contact with someone who had a problem like Lucy's, how confident would you feel in helping them?" (rated on a 5-point Likert scale). Help provided to peers will be assessed by asking the adolescents at baseline and 12 months whether, over the previous 12 months, they had come across someone with a mental health problem, what the nature of the problem was, whether they tried to help the person, what they did to help, and (at 12 months) whether the information in the teen MHFA course influenced what they did. The social distance scale for mental health problem will be assessed using items from the personal stigma questionnaire and social distance questionnaire The weak-not-sick scale for social phobia, will be assessed using items from the personal stigma questionnaire The dangerous-unpredictable scale for depression will be assessed using items from the personal stigma questionnaire Psychological distress in students will be measured using the K6 questionnaire Student confidence in assisting a peer in a physical first aid situation. The Secondary outcome of interest will be the quality of physical first aid intentions. To obtain a measure of students likelihood to seek the help of an adult for a friend, students will be asked which people they consider helpful, harmful or neither/depends on Lucy's problem from a list of Counsellor, General Practitioner or family doctor, psychologist, close friend, family member, parent, teacher, school welfare coordinator/school counsellor and religious leader.

ACTRN12621001589875 *(Continued)*

	Recognition of a mental health problem will be assessed by a single item in response to a video vignette depicting a young person with symptoms or mental health problem To assess student's likelihood of seeking help for themselves they will be asked to select one or a number of options to "If I had a problem like Lucy, I would.... Satisfaction with the tMHFA program will be assessed by asking participants to rate on a 5-point Likert scale how new the information was, how easy to understand, how well presented, and how much the different program teaching materials were liked. Satisfaction with the LTFA program will be assessed by asking participants to rate on a 5-point Likert scale how new the information was, how easy to understand, how well presented, and how much the different program teaching materials were liked. A further measure of satisfaction with the tMHFA program will be assessed by asking participants to rate on a 5-point Likert scale how useful the program was and how useful it is likely to be in the future. A further measure of satisfaction with the LTFA program will be assessed by asking participants to rate on a 5-point Likert scale how useful the program was and how useful it is likely to be in the future. Use of the tMHFA training manual by students after the program will be assessed Use of the LTFA training manual by students after the program will be assessed In the online questionnaire, participants will be asked about situations in the previous 12 months, where the participant encountered someone who has required first aid because of a physical emergency illness or injury, whether they offered any help and what they did to help, and (at 12 months) whether the information in the PFA course influenced what they did.
Starting date	01/03/2022
Contact information	Lead researcher: lhart@unimelb.edu.au
Notes	

Atanda 2020

Study name	EMPOWER
Methods	Multi-centred, two-arm clustered randomised controlled trial. The unit of randomisation is organisation, and randomisation of organisations will be stratified by size of organisation, with three strata being defined [22], small (< 50 employees), medium (50–249 employees) and large (>250 employees). The randomisation schedule will be generated by GD using Random.org (https://www.random.org/randomness/) and allocation assigned to an organisation after completion of baseline measures. Participants, mental health first-aiders and researchers will not be blinded to treatment allocation due to the nature of the study. However, independent staff helping to process the data, the trial statistician and health economist will all be blinded to intervention status.
Participants	Inclusion criteria: organisations expressing an interest (directly to MHFAE) in undertaking MHFA training, who have not undertaken this training previously; organisations who agree to participate and are able to provide data on sickness absenteeism, presenteeism and other productivity data. For the purposes of this study, participants will be all employees working in each organisation who provide help-seeking outcome data

Atanda 2020 *(Continued)*

	Exclusion criteria: organisations who have already introduced MHFA across all sites and departments; those who decline to participate in adopting MHFA training; organisations and employees who participated in the pilot study.
Interventions	Mental Health First Aid Intervention: Two-day MHFA training provided by MHFA England. Organisations will raise awareness of the presence of MHFA in the workplace, with delivery of MHFA by trained members to participants in the workplace. The intervention has 3 parts:1. Two-day MHFA training provided by MHFA England. A manualised programme designed to provide individuals with: an in-depth understanding of mental health and the factors that can affect well-being, practical skills to spot triggers and signs of mental health issues, confidence to step in, reassure and support a person in distress, enhanced interpersonal skills such as non-judgemental listening, knowledge to help someone recover their health by guiding them to further support - whether that's self-help resources, through their employer, the NHS, or a mix. 2.Raising awareness of the presence of MHFA in the organisation. 3. The application of MHFA to participants in the workplace using the manualised five-stage approach, ALGEE: Approach the person, assess and assist with any crisis; Listen and communicate non-judgementally; Give support and information; Encourage the person to get appropriate professional help and Encourage them to seek other forms of support Control: Usual practice and is defined as an organisation that has not previously introduced MHFA and agrees to not introduce the 2-day MHFA training during the period of the study. The organisations allocated to usual practice arm will receive a brief consultation from MHFAE on the promotion of mental health and wellbeing in the workplace.
Outcomes	**Primary outcome** • Change in Employees health seeking behaviour, measured using the Actual Help Seeking Questionnaire [AHSQ] **Secondary outcomes** • Change in Employees Health Seeking Intentions, measured by the General Help-Seeking Questionnaire [GHSQ] • Change in Employees' Mental Health and Well-being, measured using the Warwick-Edinburgh Mental Health and Well-being Scale [WEMHWBS] • Change in Mental Health First-Aiders' Mental Health Literacy, measured by the Mental Health Literacy Scale [MHLS] • Change in Employees' Quality of Life, measured using using the EQ-5D • Change in Employees' Self-Efficacy for Seeking Mental Health Care, measured using the Employees' Self-Efficacy for Seeking Mental Health Care Scale [SE-SMHC] • Change in Employees Social well-being, measured using the Social Well-being Scale [SWBS] • Change in Employees' use of standard mental health and other services, measured using adapted version of the Client Services Receipt Inventory [CSRI] • Change in Employees' Quality of Life, measured using the Short Form-12 Health Survey, [SF-12] All outcomes measured at 6, 12 and 24 months
Starting date	January 20, 2020
Contact information	Kerry Wood London South Bank University London, United Kingdom
Notes	ClinicalTrials.gov Identifier: NCT04311203 Sponsor: London South Bank University, 103 Borough Road, London, SE1 0AA Funding: Mental Health First Aid England, 21 Prescot St, Whitechapel, London, E1 8BB. England.

Eisman 2020

Study name	Comprehensive School Safety Initiative
Methods	Cluster-randomised controlled trial. Clusters are co-educational elementary schools in Genessee County Intermediary School District, Michigan.
Participants	**Inclusion criteria**: schools with at least two grades between grades 4–6, having a student population with 50% or higher free or reduced school lunch eligibility, being involved in MIBLISI (Michigan's Integrated Behavior and Learning Support Initiative) and PBIS (Positive Behavioral Interventions & Supports) and being committed to the project
Interventions	**Intervention**: The intervention is focused on promoting a positive school climate guided by a school-based 3-person leadership team (3-PLT) using a hybrid Type II design. The 3-PLT includes a School Resource Officer, (SRO), administrator and mental health services professional as a newly appointed climate specialist (CS). The interventions to be delivered include 1) Restorative justice, 2) Mental Health First Aid training and 3) Crime Prevention Through Environmental Design. **Control**: not specified
Outcomes	1. Student school-climate perceptions are measured by students self-reporting on the Student Climate Reflection Scale in the MiPHY Survey at baseline and 9 months (beginning and end of school year) 2. Emotional functioning (anxiety and depression symptoms) data are measured by students self-reporting in the MiPHY Survey at baseline and 9 months (beginning and end of school year) 3. Aggression is measured by students self-reporting in the MiPHY Survey at baseline and 9 months (beginning and end of school year) 4. Violence, victimization, and bullying are measured by students self-reporting on the School Victimization Scale and Outside Victimization Scale in the MiPHY Survey at baseline and 9 months (beginning and end of school year) 5. School violence perceptions are measured by students self-reporting on the School Perceived Risk Scale in the MiPHY Survey at baseline and 9 months (beginning and end of school year) 6. Student violations and truancy are measured by data reported and abstracted from school records at the end of the school year, annually 7. Student discipline and behavioural referrals are measured by data reported and abstracted from school records at the end of the school year, annually
Starting date	01/09/2017
Contact information	Andrea Eisman, Department of Health Behavior and Health Education, School of Public Health, University of Michigan Email: aeisman@umich.edu
Notes	Funding: National Institute of Justice, grant 2015-CK-BX-0017

Wheeler 2020

Study name	PharMIbridge C-RCT
Methods	Cluster-RCT Pharmacies will be randomised into the IG or CG after stratification by region and geographical location (urban/rural/remote). Within each stratum, pharmacies will be randomly allocated in a ratio of 1:1 to the IG or CG. Randomisation will occur after all pharmacies for that RCT region have been recruited. The number of full-time equivalent employees will be ranked within each stratum, and pharmacies will be formed into pairs. A list of computer-generated random numbers will be used to allocate either the PharMIbridge intervention (IG) or MedsCheck service (CG) to the first of each pair; the second in each pair will be allocated the alternative service.

Wheeler 2020 *(Continued)*

Participants	**Inclusion criteria** Pharmacy eligibility Community pharmacies will be included if they: • are located within the selected RCT regions; • be approved to dispense pharmaceutical benefits as part of the Pharmaceutical Benefits Scheme (PBS) defined in Section 90 of the National Health Act 1953 (Cth) (Section 90 Pharmacy); • are accredited against Quality Care Community Pharmacy Standard (AS85000); • have a demographic of clientele that includes consumers living with SPMI; • routinely provide MedsCheck as an established professional service (i.e. MedsCheck is not a new service in the pharmacy); • can guarantee that the PharMIbridge intervention is carried out by a Registered Pharmacist that has successfully completed the training and any consultations are undertaken with the consumer and/or the consumer's carer with consideration of the consumer's comfort and right to privacy • have a private consultation room or area for confidential conversations and assessments; • consent (by the pharmacy owner/manager) to participate; and, • have an established working relationship with local GP practices or centres, mental health care teams, and/or are already engaged with mental health promotion. Similar to professional practice guidelines for MedsCheck, it is a requirement that trained pharmacists involved in the RCT are not responsible for dispensing or other professional duties whilst interacting with consumer participants (e.g. when providing a MedsCheck service or undertaking the Initial Health Review as part of the PharMIbridge intervention). As some pharmacies in the selected RCT regions may only have one pharmacist on-duty at a particular time, these consultations must be conducted outside the standard pharmacy operating hours or whilst another pharmacist is on duty. Community pharmacies that are involved in the 6CPA Community Pharmacy in Health Care Homes Trial, or any other trials, would be assessed for suitability in terms of workload. **Consumer Eligibility** Consumers will be eligible to participate in the RCT if they meet all of the following criteria: • have the capacity to provide consent (as determined by a trained pharmacist and/or member of the consumer participant's treating team); • aged 16 years and over and residing in the community; • be using at least one antipsychotic or mood stabiliser for at least six-months, continuously, for the treatment of SPMI such as schizophrenia or bipolar disorder (consumers who change medication during this time would still be eligible to participate, and can be using other medication for their mental and physical health); • have a complex medication need (e.g. adherence concerns) or unmanaged physical health problems; • provide consent for pharmacists to contact at least one of their treating healthcare professionals (GP, case manager, psychiatrist) regarding RCT participation; and, • provide consent for researchers to access their medication dispensing data from the pharmacy, MBS, PBS, hospitalisation and emergency department visit data for 12-months pre- and 6-months post- RCT period. **Exclusion criteria** Pharmacies will be excluded from the RCT if they: • are not located within the selected RCT regions; • would find it particularly difficult to recruit the required number of consumer participants living with a SPMI (i.e. do not see many of these consumers); • do not currently provide or a regular provider of a MedsCheck service; • do not have a private consultation area where conversations and assessments can be kept confidential;

Wheeler 2020 *(Continued)*

	• do not actively engage with other healthcare professionals (e.g. local GP) or mental health care teams; and, • do not have approval to participate from the pharmacy owner or manager. Consumers will be excluded from participating in the RCT if they: • are aged under 16 years; • have unstable mental health symptoms as recognised by the pharmacist or deemed unsuitable for participation by their treating healthcare professional or carer; • use antipsychotic or mood stabiliser medications inconsistently or 'when required', or have not used these medications on a regular basis for the last six months; • are prescribed an antipsychotic or mood stabiliser medication for the treatment of another illness other than those defined in inclusion criteria (for example, off-label use for alternative condition such as quetiapine for sleep or anxiety); or • do not give consent to contact their treating healthcare professionals, or to access PBS, MBS, hospitalisation and/or emergency department data.
Interventions	**PharMIbridge intervention** The PharMIbridge intervention involves a pharmacist-led, in-depth support service for consumer participants living with SPMI delivered over six-months. The PharMIbridge intervention is goal-oriented, flexible and individualised. Goals will be guided by various self-assessment questionnaires and tools and be tailored to meet individual needs (with a specific focus on medication adherence and addressing physical health concerns). The PharMIbridge service will be delivered by trained community pharmacists who work in a community pharmacy randomised to the intervention group (IG). Prior to delivering the intervention, pharmacists from IG pharmacies will undertake two days of training. During the first day of training, pharmacists (and additional pharmacy support staff such as pharmacy assistants) will complete Blended-Mental Health First Aid (B-MHFA; 6-8 hours online modules + 4 hours interactive session with a MHFA instructor) training and become accredited MHFAiders. They will also receive training in research processes, including participant recruitment, service delivery and using the electronic platform (GuildCare NG) to record pre- and post-service outcomes and follow-up consultations Comparator: Standard care involving a medication management service (MedsCheck). Participants recruited by a CG pharmacy will receive a standard MedsCheck service after enrolment and then continue to receive the usual care that the community pharmacy provides. All requirements outlined for the MedsCheck service will be followed, noting that some participants may not have otherwise been eligible for this government funded service (eg, not taking five or more medicines). Pharmacists will schedule a follow-up consultation to complete final RCT outcome assessments with participants 6-months following recruitment into the RCT.
Outcomes	**Primary outcome** • Difference in medication adherence rates between the IG and CG at the RCT conclusion, as assessed by pharmacy dispensing data, PBS data and self-reported assessment using the Reported Adherence to Medication (RAM) Scale Secondary outcomes: • changes in factors associated with cardiometabolic risk and quality of life, with an emphasis on physical health and psychological wellbeing; • medication-related problems; • community pharmacists' knowledge, confidence and ability to support consumers living with SPMI; • and any effects on health care service acceptability, utilisation and cost-effectiveness All outcomes measured at baseline and at 6 months follow up
Starting date	Anticipated date of first participant enrolment: 16/09/2020

Wheeler 2020 *(Continued)*

Contact information	Prof Amanda Wheeler Room 1.05, Building N70 Menzies Health Institute Queensland Nathan Campus, Griffith University 170 Kessels Road, Nathan, QLD 4111
Notes	Sponsor: The Pharmacy Guild of Australia, Level 2, 15 National Circuit, Barton, ACT 2600 Australia PO Box 310, Fyshwick, ACT 2609 Australia

CPR: cardiopulmonary resuscitation ; **DASS:** Depression, Anxiety, and Stress Scale ; **MHFA:** Mental Health First Aid; **NHS:** National Health Service; **PMI:**PharMIbridge intervention;**WES:** Work Environment Scale

RISK OF BIAS

Legend: ✓ Low risk of bias ✗ High risk of bias ~ Some concerns

Risk of bias for analysis 1.1 Individual mental health: 6 months to a year

	Bias					
Study	**Randomisation process**	**Deviations from intended interventions**	**Missing outcome data**	**Measurement of the outcome**	**Selection of the reported results**	**Overall**
Jorm 2010b	✓	✗	✗	✗	✓	✗
Kidger 2016	✓	✗	~	✗	✓	✗
Kidger 2016	✓	✗	~	✗	✓	✗
Reavley 2014	✓	✗	✗	✗	✓	✗
Reavley 2014	✓	✗	✗	✗	✓	✗

DATA AND ANALYSES

Comparison 1. MHFA training versus control

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Individual mental health: 6 months to a year	3	3939	Odds Ratio (IV, Random, 95% CI)	0.88 [0.61, 1.28]
1.2 Individual mental health: one year plus	2	5049	Odds Ratio (IV, Random, 95% CI)	1.10 [0.98, 1.22]

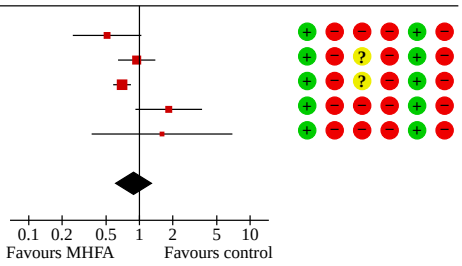
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.3 Individual vignette recognition: 6 months to a year	2	1990	Odds Ratio (IV, Random, 95% CI)	1.51 [0.80, 2.82]
1.4 Individual beliefs about treatment: 6 months to a year	2	2111	Odds Ratio (IV, Random, 95% CI)	0.88 [0.61, 1.26]
1.5 Individual vignette recognition: one year plus	1	620	Odds Ratio (IV, Random, 95% CI)	1.90 [0.77, 4.70]
1.6 Individual beliefs about treatment: one year plus	1	620	Odds Ratio (IV, Random, 95% CI)	0.86 [0.44, 1.70]
1.7 Individual stigma (depression): 6 months to one year	1	833	Odds Ratio (IV, Random, 95% CI)	1.08 [0.61, 1.90]
1.8 Individual stigma (social distance): 6 months to one year	1	833	Odds Ratio (IV, Random, 95% CI)	1.12 [0.58, 2.15]
1.9 Individual stigma (depression): one year plus	1	620	Odds Ratio (IV, Random, 95% CI)	1.30 [0.66, 2.54]
1.10 Individual stigma (social distance): one year plus	1	620	Odds Ratio (IV, Random, 95% CI)	1.20 [0.66, 2.18]
1.11 Trainee vignette recognition: depression, post-intervention	4	937	Odds Ratio (IV, Random, 95% CI)	2.91 [1.36, 6.24]
1.12 Trainee vignette recognition: depression, up to 6 months	3	426	Risk Ratio (M-H, Random, 95% CI)	1.07 [1.01, 1.13]
1.13 Trainee vignette recognition: depression, 6 months plus	5	1184	Odds Ratio (IV, Random, 95% CI)	2.62 [1.21, 5.68]
1.14 Trainee beliefs about treatment: depression, 6 months plus	4	1038	Std. Mean Difference (IV, Random, 95% CI)	0.18 [-0.03, 0.39]
1.15 Trainee personal stigma: depression, post-intervention	2	359	Std. Mean Difference (IV, Random, 95% CI)	0.41 [0.17, 0.64]
1.16 Trainee perceived stigma: depression. post-intervention	2	359	Std. Mean Difference (IV, Random, 95% CI)	0.18 [-0.31, 0.67]
1.17 Trainee stigma: social distance (depression): post-intervention	3	702	Std. Mean Difference (IV, Random, 95% CI)	-0.40 [-1.10, 0.31]
1.18 Trainee personal stigma: depression, up to 6 months	2	144	Std. Mean Difference (IV, Random, 95% CI)	0.35 [0.02, 0.68]
1.19 Trainee personal stigma: depression, 6 months plus	3	706	Std. Mean Difference (IV, Random, 95% CI)	0.27 [-0.07, 0.60]
1.20 Trainee perceived stigma (depression), 6 months to a year	3	706	Std. Mean Difference (IV, Random, 95% CI)	0.07 [-0.08, 0.23]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.21 Trainee contact, up to 6 months	2	336	Risk Ratio (M-H, Random, 95% CI)	1.05 [0.84, 1.32]
1.22 Trainee contact, 6 months plus	2	472	Odds Ratio (IV, Random, 95% CI)	1.71 [1.01, 2.90]
1.23 Trainee mental health, post-intervention	3	845	Odds Ratio (IV, Random, 95% CI)	0.48 [0.18, 1.26]
1.24 Trainee mental health, up to 6 months	2	854	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.07, 0.26]
1.25 Trainee mental health, 6 months plus	3	795	Odds Ratio (IV, Random, 95% CI)	0.40 [0.17, 0.96]

Analysis 1.1. Comparison 1: MHFA training versus control, Outcome 1: Individual mental health: 6 months to a year

Study or Subgroup	log[Odds Ratio]	SE	MHFA Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Jorm 2010b (1)	-0.6733	0.3638	730	543	15.9%	0.51 [0.25 , 1.04]
Kidger 2016 (2)	-0.057	0.1979	208	141	27.1%	0.94 [0.64 , 1.39]
Kidger 2016 (3)	-0.3612	0.0943	742	742	35.0%	0.70 [0.58 , 0.84]
Reavley 2014 (4)	0.6098	0.3537	288	211	16.5%	1.84 [0.92 , 3.68]
Reavley 2014 (5)	0.47	0.7471	132	202	5.5%	1.60 [0.37 , 6.92]
Total (95% CI)			**2100**	**1839**	**100.0%**	**0.88 [0.61 , 1.28]**

Heterogeneity: Tau² = 0.09; Chi² = 10.49, df = 4 (P = 0.03); I² = 62%
Test for overall effect: Z = 0.65 (P = 0.52)
Test for subgroup differences: Not applicable



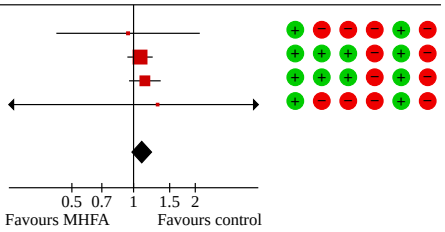
Footnotes
(1) School students. Measure is the SDQ. Cluster RCT: we have used the authors' estimate of the OR.
(2) School staff. Measure is the WEMWBS. Cluster RCT: authors' estimate of MD converted into an OR. Direction of benefit reversed
(3) School students. Measure is the SDQ. Cluster RCT: authors estimate of MD converted into an OR. The figure of 742 students in each group is an estimate.
(4) College students. Measure is the K6. Cluster RCT: we have used the authors' estimate of the OR.
(5) College staff. Measure is the K6. Cluster RCT: we have used the authors' estimate of the OR.

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.2. Comparison 1: MHFA training versus control, Outcome 2: Individual mental health: one year plus

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Reavley 2014 (1)	-0.0619	0.411	212	140	1.9%	0.94 [0.42 , 2.10]
Kidger 2021 (2)	0.07256	0.07256	1278	1422	59.6%	1.08 [0.93 , 1.24]
Kidger 2021 (3)	0.12697	0.0907	806	923	38.1%	1.14 [0.95 , 1.36]
Reavley 2014 (4)	0.27	0.8659	103	165	0.4%	1.31 [0.24 , 7.15]
Total (95% CI)			**2399**	**2650**	**100.0%**	**1.10 [0.98 , 1.22]**

Heterogeneity: Tau² = 0.00; Chi² = 0.40, df = 3 (P = 0.94); I² = 0%
Test for overall effect: Z = 1.64 (P = 0.10)
Test for subgroup differences: Not applicable



Footnotes

(1) This is the result for tertiary-education students. Measure is the K6. We have used the authors' estimate of the odds ratio.
(2) This is the result for students. Measure is the SDQ. We have converted the authors' adjusted MD estimate into an odds ratio
(3) This is the result for staff. Measure is the WEMWBS. We have converted the authors' adjusted MD estimate into an odds ratio.
(4) This is the result for tertiary-education staff. Measure is the K6. We have used the authors' estimate of the odds ratio.

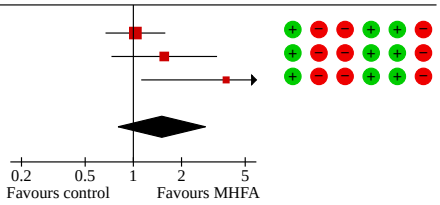
Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.3. Comparison 1: MHFA training versus control, Outcome 3: Individual vignette recognition: 6 months to a year

Study or Subgroup	log[Odds Ratio]	SE	Favours Control Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Jorm 2010b (1)	0.0296	0.2194	648	509	48.6%	1.03 [0.67 , 1.58]
Reavley 2014 (2)	0.4447	0.3875	288	211	32.8%	1.56 [0.73 , 3.33]
Reavley 2014 (3)	1.335	0.6233	132	202	18.6%	3.80 [1.12 , 12.89]
Total (95% CI)			**1068**	**922**	**100.0%**	**1.51 [0.80 , 2.82]**

Heterogeneity: Tau² = 0.16; Chi² = 4.28, df = 2 (P = 0.12); I² = 53%
Test for overall effect: Z = 1.27 (P = 0.20)
Test for subgroup differences: Not applicable



Footnotes

(1) This is the result for school students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(3) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

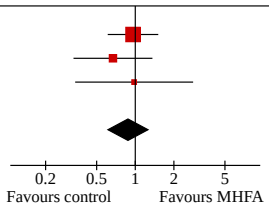
Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.4. Comparison 1: MHFA training versus control, Outcome 4: Individual beliefs about treatment: 6 months to a year

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI	Risk of Bias A B C D E F
Jorm 2010b (1)	-0.0408	0.2314	732	546	62.7%	0.96 [0.61 , 1.51]		+ − − + + −
Reavley 2014 (2)	-0.4005	0.3613	288	211	25.7%	0.67 [0.33 , 1.36]		+ − − + + −
Reavley 2014 (3)	-0.0202	0.5401	132	202	11.5%	0.98 [0.34 , 2.82]		+ − − + + −
Total (95% CI)			**1152**	**959**	**100.0%**	**0.88 [0.61 , 1.26]**		

Heterogeneity: Tau² = 0.00; Chi² = 0.75, df = 2 (P = 0.69); I² = 0%
Test for overall effect: Z = 0.71 (P = 0.47)
Test for subgroup differences: Not applicable



Footnotes

(1) This is the result for school students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(3) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

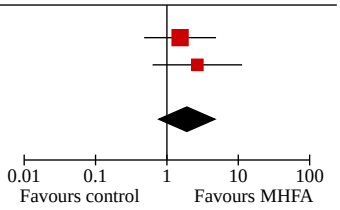
Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.5. Comparison 1: MHFA training versus control, Outcome 5: Individual vignette recognition: one year plus

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI
Reavley 2014 (1)	0.4253	0.5915	212	140	60.8%	1.53 [0.48 , 4.88]	
Reavley 2014 (2)	0.9821	0.7368	103	165	39.2%	2.67 [0.63 , 11.32]	
Total (95% CI)			**315**	**305**	**100.0%**	**1.90 [0.77 , 4.70]**	

Heterogeneity: Tau² = 0.00; Chi² = 0.35, df = 1 (P = 0.56); I² = 0%
Test for overall effect: Z = 1.40 (P = 0.16)
Test for subgroup differences: Not applicable



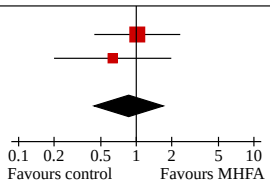
Footnotes

(1) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

Analysis 1.6. Comparison 1: MHFA training versus control, Outcome 6: Individual beliefs about treatment: one year plus

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Reavley 2014 (1)	0.0198	0.429	212	140	65.1%	1.02 [0.44 , 2.36]
Reavley 2014 (2)	-0.462	0.5854	103	165	34.9%	0.63 [0.20 , 1.98]
Total (95% CI)			**315**	**305**	**100.0%**	**0.86 [0.44 , 1.70]**

Heterogeneity: Tau² = 0.00; Chi² = 0.44, df = 1 (P = 0.51); I² = 0%
Test for overall effect: Z = 0.43 (P = 0.67)
Test for subgroup differences: Not applicable



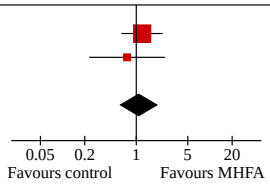
Footnotes
(1) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

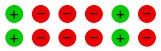
Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.7. Comparison 1: MHFA training versus control, Outcome 7: Individual stigma (depression): 6 months to one year

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Reavley 2014 (1)	0.1823	0.3288	288	211	77.1%	1.20 [0.63 , 2.29]
Reavley 2014 (2)	-0.2877	0.6031	132	202	22.9%	0.75 [0.23 , 2.45]
Total (95% CI)			**420**	**413**	**100.0%**	**1.08 [0.61 , 1.90]**

Heterogeneity: Tau² = 0.00; Chi² = 0.47, df = 1 (P = 0.49); I² = 0%
Test for overall effect: Z = 0.26 (P = 0.80)
Test for subgroup differences: Not applicable





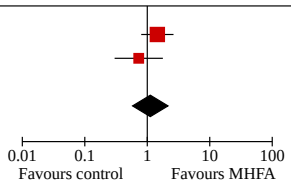
Footnotes
(1) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.8. Comparison 1: MHFA training versus control, Outcome 8: Individual stigma (social distance): 6 months to one year

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI	Risk of Bias A B C D E F
Reavley 2014 (1)	0.3716	0.3034	288	211	62.1%	1.45 [0.80 , 2.63]		+ − − − + −
Reavley 2014 (2)	-0.3147	0.4537	132	202	37.9%	0.73 [0.30 , 1.78]		+ − − − + −
Total (95% CI)			**420**	**413**	**100.0%**	**1.12 [0.58 , 2.15]**		

Heterogeneity: Tau² = 0.09; Chi² = 1.58, df = 1 (P = 0.21); I² = 37%
Test for overall effect: Z = 0.33 (P = 0.74)
Test for subgroup differences: Not applicable



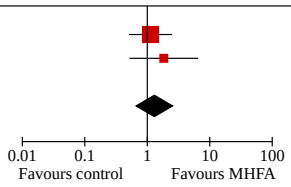
Footnotes
(1) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.9. Comparison 1: MHFA training versus control, Outcome 9: Individual stigma (depression): one year plus

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI	Risk of Bias A B C D E F
Reavley 2014 (1)	0.1222	0.4059	212	140	71.6%	1.13 [0.51 , 2.50]		+ − − − + −
Reavley 2014 (2)	0.6098	0.6448	103	165	28.4%	1.84 [0.52 , 6.51]		+ − − − + −
Total (95% CI)			**315**	**305**	**100.0%**	**1.30 [0.66 , 2.54]**		

Heterogeneity: Tau² = 0.00; Chi² = 0.41, df = 1 (P = 0.52); I² = 0%
Test for overall effect: Z = 0.76 (P = 0.45)
Test for subgroup differences: Not applicable



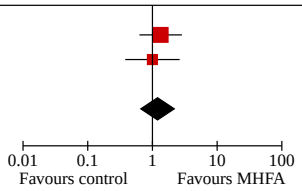
Footnotes
(1) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.10. Comparison 1: MHFA training versus control, Outcome 10: Individual stigma (social distance): one year plus

Study or Subgroup	log[Odds Ratio]	SE	Control Total	MHFA Total	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI	Risk of Bias A B C D E F
Reavley 2014 (1)	0.2927	0.3851	212	140	62.2%	1.34 [0.63 , 2.85]		+ − − − + −
Reavley 2014 (2)	0	0.4937	103	165	37.8%	1.00 [0.38 , 2.63]		+ − − − + −
Total (95% CI)			**315**	**305**	**100.0%**	**1.20 [0.66 , 2.18]**		

Heterogeneity: Tau² = 0.00; Chi² = 0.22, df = 1 (P = 0.64); I² = 0%
Test for overall effect: Z = 0.60 (P = 0.55)
Test for subgroup differences: Not applicable



Footnotes

(1) This is the result for tertiary-education students. This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) This is the result for tertiary-education staff. This is a cluster RCT and we have used the authors' estimate of the odds ratio.

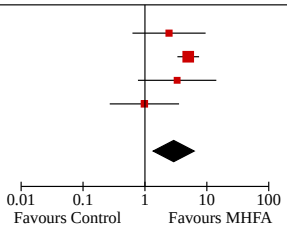
Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.11. Comparison 1: MHFA training versus control, Outcome 11: Trainee vignette recognition: depression, post-intervention

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI	Risk of Bias A B C D E F
Burns 2017 (1)	0.896088	0.693912	52	68	19.1%	2.45 [0.63 , 9.55]		+ + − + + −
Hung 2021 (2)	1.61066	0.2055	168	175	43.0%	5.01 [3.35 , 7.49]		− + − + ? −
Jorm 2010a (3)	1.1975	0.7435	156	82	17.5%	3.31 [0.77 , 14.22]		+ + − + + −
Jorm 2010b (4)	-0.0202	0.6577	151	85	20.4%	0.98 [0.27 , 3.56]		+ − − + + −
Total (95% CI)			**527**	**410**	**100.0%**	**2.91 [1.36 , 6.24]**		

Heterogeneity: Tau² = 0.31; Chi² = 6.31, df = 3 (P = 0.10); I² = 52%
Test for overall effect: Z = 2.75 (P = 0.006)
Test for subgroup differences: Not applicable



Footnotes

(1) We have converted the data from the paper into an odds ratio
(2) We have converted the MDs from the paper into SMDs and then into an odds ratio.
(3) We have combined the two MHFA groups. We have converted the data from the paper into an odds ratio
(4) This is a cluster RCT and we have used the authors' estimate of the odds ratio.

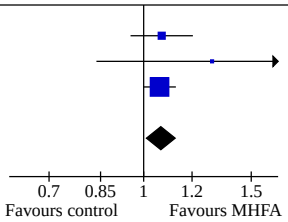
Risk of bias legend

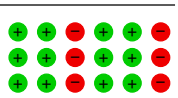
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.12. Comparison 1: MHFA training versus control, Outcome 12: Trainee vignette recognition: depression, up to 6 months

Study or Subgroup	MHFA Events	MHFA Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
Burns 2017	48	51	51	58	21.2%	1.07 [0.95 , 1.20]
Davies 2018 (1)	5	5	8	11	1.5%	1.29 [0.84 , 2.00]
Kitchener 2004 (2)	140	146	140	155	77.3%	1.06 [1.00 , 1.13]
Total (95% CI)		**202**		**224**	**100.0%**	**1.07 [1.01 , 1.13]**
Total events:	193		199			

Heterogeneity: Tau² = 0.00; Chi² = 0.80, df = 2 (P = 0.67); I² = 0%
Test for overall effect: Z = 2.34 (P = 0.02)
Test for subgroup differences: Not applicable





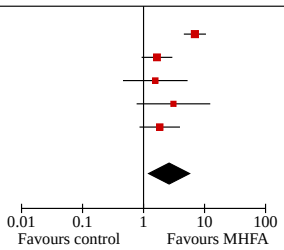
Footnotes
(1) We have used the authors' non-ITT data
(2) Authors used an LOCF approach to analyse data. Data based on the percentages given by the authors and the whole original number in each group

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.13. Comparison 1: MHFA training versus control, Outcome 13: Trainee vignette recognition: depression, 6 months plus

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Hung 2021 (1)	1.9381462	0.21281335	167	165	24.9%	6.95 [4.58 , 10.54]
Jensen 2016 (2)	0.5068	0.2956	142	132	23.3%	1.66 [0.93 , 2.96]
Jorm 2010a (3)	0.4428	0.622	148	81	16.1%	1.56 [0.46 , 5.27]
Jorm 2010b (4)	1.1282	0.709	141	80	14.4%	3.09 [0.77 , 12.40]
Svensson 2014 (5)	0.6114	0.3894	66	62	21.3%	1.84 [0.86 , 3.95]
Total (95% CI)			**664**	**520**	**100.0%**	**2.62 [1.21 , 5.68]**

Heterogeneity: Tau² = 0.58; Chi² = 21.18, df = 4 (P = 0.0003); I² = 81%
Test for overall effect: Z = 2.45 (P = 0.01)
Test for subgroup differences: Not applicable



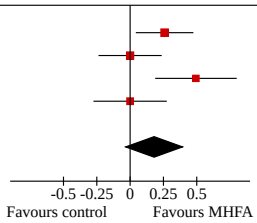
Footnotes
(1) We have converted the data into an SMD and then into an odds ratio
(2) It was not clear how many participants remained in each group at follow-up: we have given the baseline figures. We have used the authors' estimate of the OR
(3) We have combined the two MHFA groups. We have converted the data from the paper into an odds ratio
(4) This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(5) We obtained additional data from the study author for this calculation

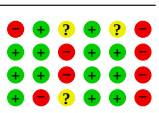
Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.14. Comparison 1: MHFA training versus control, Outcome 14: Trainee beliefs about treatment: depression, 6 months plus

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Hung 2021	0.258715	0.11023	167	165	28.0%	0.26 [0.04 , 0.47]
Jensen 2016 (1)	0	0.1209	142	132	26.5%	0.00 [-0.24 , 0.24]
Jorm 2010a (2)	0.494	0.156	148	81	21.8%	0.49 [0.19 , 0.80]
Svensson 2014 (3)	0	0.1404	100	103	23.8%	0.00 [-0.28 , 0.28]
Total (95% CI)			**557**	**481**	**100.0%**	**0.18 [-0.03 , 0.39]**

Heterogeneity: Tau² = 0.03; Chi² = 8.40, df = 3 (P = 0.04); I² = 64%
Test for overall effect: Z = 1.65 (P = 0.10)
Test for subgroup differences: Not applicable





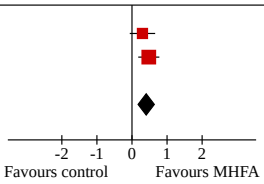
Footnotes
(1) It was not clear how many participants remained in each group at follow-up: we have given the baseline figures. These were used to calculate MD
(2) We have combined the two MHFA groups. We have calculated the SMD, based on our calculation of the odds ratio
(3) It was unclear how many participants were in each group. We have estimated the number of participants in each group, without allowing for attrition

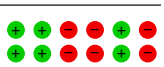
Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.15. Comparison 1: MHFA training versus control, Outcome 15: Trainee personal stigma: depression, post-intervention

Study or Subgroup	Std. Mean Difference	SE	Control Total	MHFA Total	Weight	Std. Mean Difference IV, Random, 95% CI
Burns 2017	0.2989	0.1847	69	52	40.9%	0.30 [-0.06 , 0.66]
Jorm 2010a (1)	0.4793	0.1536	82	156	59.1%	0.48 [0.18 , 0.78]
Total (95% CI)			**151**	**208**	**100.0%**	**0.41 [0.17 , 0.64]**

Heterogeneity: Tau² = 0.00; Chi² = 0.56, df = 1 (P = 0.45); I² = 0%
Test for overall effect: Z = 3.43 (P = 0.0006)
Test for subgroup differences: Not applicable





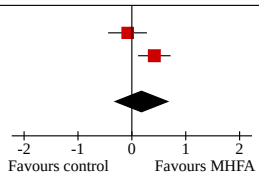
Footnotes
(1) We have combined the two MHFA groups. We have converted the data from the paper into an odds ratio and then into an SMD

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.16. Comparison 1: MHFA training versus control, Outcome 16: Trainee perceived stigma: depression. post-intervention

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E F
Burns 2017 (1)	-0.0806	0.1837	52	69	47.9%	-0.08 [-0.44 , 0.28]		+ + − − + −
Jorm 2010a (2)	0.417	0.1535	156	82	52.1%	0.42 [0.12 , 0.72]		+ + − − + −
Total (95% CI)			**208**	**151**	**100.0%**	**0.18 [-0.31 , 0.67]**		

Heterogeneity: Tau² = 0.10; Chi² = 4.32, df = 1 (P = 0.04); I² = 77%
Test for overall effect: Z = 0.72 (P = 0.47)
Test for subgroup differences: Not applicable



Footnotes

(1) A reduction in the score means perceived stigma is higher. The MHFA group had a lower score meaning that their perceived stigma was higher.
(2) We have combined the two MHFA groups. Data from the paper converted into an OR and then into an SMD.The MHFA group were less likely to perceive stigma

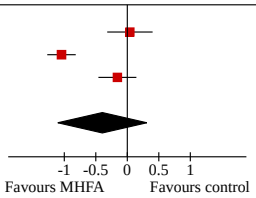
Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.17. Comparison 1: MHFA training versus control, Outcome 17: Trainee stigma: social distance (depression): post-intervention

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E F
Burns 2017 (1)	0.0416	0.1837	52	69	32.5%	0.04 [-0.32 , 0.40]		+ + − − + −
Hung 2021	-1.044275	0.115216	168	175	34.2%	-1.04 [-1.27 , -0.82]		− + − − ? −
Jorm 2010a (2)	-0.1571	0.1537	156	82	33.3%	-0.16 [-0.46 , 0.14]		+ + − − + −
Total (95% CI)			**376**	**326**	**100.0%**	**-0.40 [-1.10 , 0.31]**		

Heterogeneity: Tau² = 0.37; Chi² = 35.25, df = 2 (P < 0.00001); I² = 94%
Test for overall effect: Z = 1.10 (P = 0.27)
Test for subgroup differences: Not applicable



Footnotes

(1) The direction of this result has been reversed so that a higher score means more social distance (to agree with the direction in the Jorm 2010a study)
(2) We have combined the two MHFA groups. We have converted the data from the paper into an odds ratio and then into an SMD.

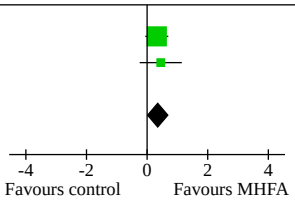
Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.18. Comparison 1: MHFA training versus control, Outcome 18: Trainee personal stigma: depression, up to 6 months

Study or Subgroup	MHFA Mean	MHFA SD	MHFA Total	Control Mean	Control SD	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Burns 2017	4.01	0.63	50	3.81	0.613	59	77.0%	0.32 [-0.06 , 0.70]
Davies 2018 (1)	-3.07	2.36	13	-4.86	4.53	22	23.0%	0.45 [-0.24 , 1.15]
Total (95% CI)			**63**			**81**	**100.0%**	**0.35 [0.02 , 0.68]**

Heterogeneity: Tau² = 0.00; Chi² = 0.10, df = 1 (P = 0.75); I² = 0%
Test for overall effect: Z = 2.06 (P = 0.04)
Test for subgroup differences: Not applicable



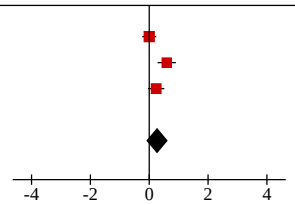
Footnotes

(1) We have used the non-ITT data from this study. We have reversed the direction of the findings to agree with the direction in the Burns 2017 study.

Analysis 1.19. Comparison 1: MHFA training versus control, Outcome 19: Trainee personal stigma: depression, 6 months plus

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Jensen 2016 (1)	0	0.1209	142	132	35.4%	0.00 [-0.24 , 0.24]
Jorm 2010a (2)	0.5954	0.1583	148	81	31.4%	0.60 [0.29 , 0.91]
Svensson 2014 (3)	0.2363	0.1409	100	103	33.2%	0.24 [-0.04 , 0.51]
Total (95% CI)			**390**	**316**	**100.0%**	**0.27 [-0.07 , 0.60]**

Heterogeneity: Tau² = 0.07; Chi² = 8.94, df = 2 (P = 0.01); I² = 78%
Test for overall effect: Z = 1.56 (P = 0.12)
Test for subgroup differences: Not applicable



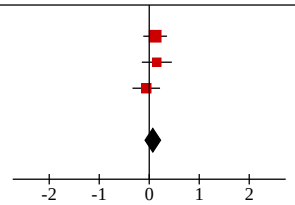
Footnotes

(1) Unclear how many participants were in the groups at follow-up, as attrition was not shown. Baseline numbers used for the MD calculation
(2) We have combined the two MHFA groups. We have converted the data from the paper into an odds ratio and then into an SMD
(3) Unclear how many participants were in each group. We have estimated the number of participants in each group without allowing for attrition

Analysis 1.20. Comparison 1: MHFA training versus control, Outcome 20: Trainee perceived stigma (depression), 6 months to a year

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Jensen 2016 (1)	0.1189	0.121	142	132	42.2%	0.12 [-0.12 , 0.36]
Jorm 2010a (2)	0.1515	0.153	148	81	26.4%	0.15 [-0.15 , 0.45]
Svensson 2014 (3)	-0.059	0.1404	100	103	31.4%	-0.06 [-0.33 , 0.22]
Total (95% CI)			**390**	**316**	**100.0%**	**0.07 [-0.08 , 0.23]**

Heterogeneity: Tau² = 0.00; Chi² = 1.29, df = 2 (P = 0.52); I² = 0%
Test for overall effect: Z = 0.91 (P = 0.36)
Test for subgroup differences: Not applicable



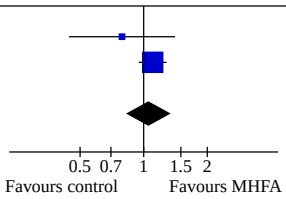
Footnotes

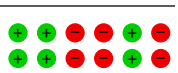
(1) It was not clear how many participants remained in each group at follow-up and so we have given the baseline figures. These figures were used for MD calculatio
(2) We have combined the two MHFA groups. We have converted the data from the paper into an odds ratio and then into an SMD
(3) Unclear how many participants were in each group. We have estimated the number of participants in each group without allowing for attrition

Analysis 1.21. Comparison 1: MHFA training versus control, Outcome 21: Trainee contact, up to 6 months

Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
Davies 2018	7	13	15	22	14.0%	0.79 [0.44 , 1.41]
Kitchener 2004 (1)	106	146	102	155	86.0%	1.10 [0.95 , 1.28]
Total (95% CI)		**159**		**177**	**100.0%**	**1.05 [0.84 , 1.32]**
Total events:	113		117			

Heterogeneity: Tau² = 0.01; Chi² = 1.21, df = 1 (P = 0.27); I² = 17%
Test for overall effect: Z = 0.44 (P = 0.66)
Test for subgroup differences: Not applicable





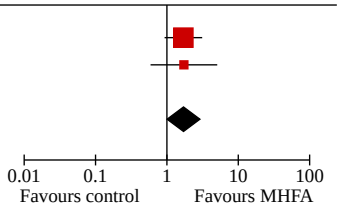
Footnotes
(1) LOCF approach used to analyse data. Data given for this result based on the percentages given by the authors and the whole original number in each group

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.22. Comparison 1: MHFA training versus control, Outcome 22: Trainee contact, 6 months plus

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Jorm 2010a (1)	0.5316	0.3095	148	81	75.9%	1.70 [0.93 , 3.12]
Jorm 2010b (2)	0.5481	0.5489	157	86	24.1%	1.73 [0.59 , 5.07]
Total (95% CI)			**305**	**167**	**100.0%**	**1.71 [1.01 , 2.90]**

Heterogeneity: Tau² = 0.00; Chi² = 0.00, df = 1 (P = 0.98); I² = 0%
Test for overall effect: Z = 1.99 (P = 0.05)
Test for subgroup differences: Not applicable

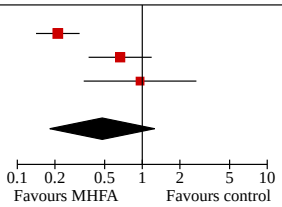


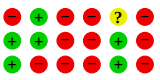
Footnotes
(1) We have combined the intervention groups and converted the data from the paper into an odds ratio
(2) Cluster RCT and we have used the authors' estimate of the odds ratio

Analysis 1.23. Comparison 1: MHFA training versus control, Outcome 23: Trainee mental health, post-intervention

Study or Subgroup	log[Odds Ratio]	SE	Experimental Total	Control Total	Weight	Odds Ratio IV, Random, 95% CI
Hung 2021 (1)	-1.5563	0.2048	168	175	37.5%	0.21 [0.14 , 0.32]
Jorm 2010a (2)	-0.4079	0.2964	156	82	35.0%	0.67 [0.37 , 1.19]
Jorm 2010b (3)	-0.0408	0.5296	169	95	27.4%	0.96 [0.34 , 2.71]
Total (95% CI)			**493**	**352**	**100.0%**	**0.48 [0.18 , 1.26]**

Heterogeneity: Tau² = 0.61; Chi² = 14.40, df = 2 (P = 0.0007); I² = 86%
Test for overall effect: Z = 1.50 (P = 0.13)
Test for subgroup differences: Not applicable





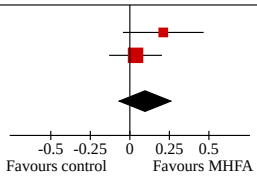
Footnotes
(1) We have converted the MDs in the paper to an SMD and then an odds ratio.
(2) We have combined the two MHFA groups and calculated the OR. This OR derives from scores on the K10 Kessler Scale dichotomised at the 19/20 cut point.
(3) This was a cluster RCT and we have calculated an OR from the data in the paper. This was derived from the Kessler K6 scale dichotomised at the 2/3 cut point

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.24. Comparison 1: MHFA training versus control, Outcome 24: Trainee mental health, up to 6 months

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Kitchener 2004	0.2115	0.1302	146	155	34.3%	0.21 [-0.04 , 0.47]
Lipson 2014 (1)	0.036	0.0852	291	262	65.7%	0.04 [-0.13 , 0.20]
Total (95% CI)			**437**	**417**	**100.0%**	**0.10 [-0.07 , 0.26]**

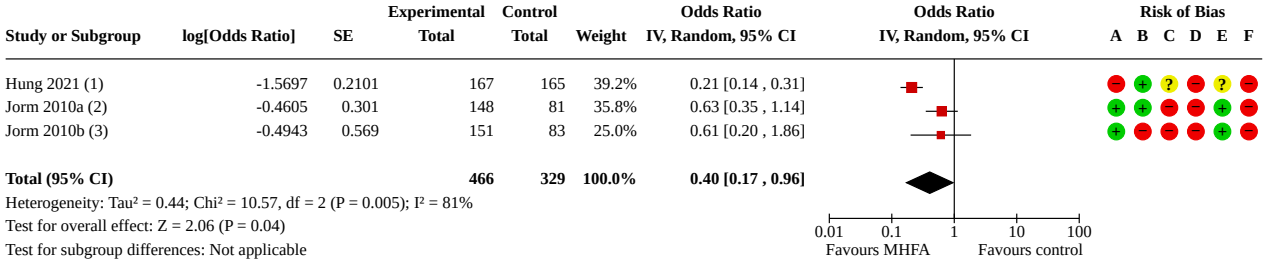
Heterogeneity: Tau² = 0.00; Chi² = 1.27, df = 1 (P = 0.26); I² = 21%
Test for overall effect: Z = 1.15 (P = 0.25)
Test for subgroup differences: Not applicable



Footnotes
(1) This was a cluster RCT and we have used the authors' estimate of the effect size

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 1.25. Comparison 1: MHFA training versus control, Outcome 25: Trainee mental health, 6 months plus



Footnotes

(1) We have converted the MDs in the paper into SMD and then an odds ratio
(2) We have combined the two MHFA groups and calculated the OR. This OR derives from scores on the K10 Kessler Scale dichotomised at the 19/20 cut point.
(3) Cluster RCT: we have calculated an OR from the data in the paper. The OR was derived from the Kessler K6 scale dichotomised at the 2/3 cut point

Risk of bias legend

(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

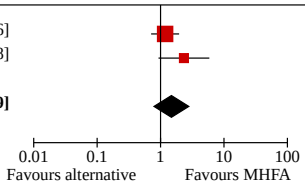
Comparison 3. MHFA training versus alternative intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 Trainee vignette recognition: depression, post-intervention	2	1402	Odds Ratio (IV, Random, 95% CI)	1.48 [0.79, 2.79]
3.2 Trainee beliefs about treatment: depression, post-intervention	2	1401	Std. Mean Difference (IV, Random, 95% CI)	0.64 [0.25, 1.04]
3.3 Trainee vignette recognition: depression/suicidality, one year plus	2	1137	Odds Ratio (IV, Random, 95% CI)	1.52 [0.90, 2.59]
3.4 Trainee stigma: social distance (depression): post-intervention	2	1400	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.32, -0.10]
3.5 Trainee mental health: one year plus	3	1088	Std. Mean Difference (IV, Random, 95% CI)	-0.07 [-0.20, 0.05]

Analysis 3.1. Comparison 3: MHFA training versus alternative intervention, Outcome 1: Trainee vignette recognition: depression, post-intervention

Study or Subgroup	log[Odds Ratio]	SE	MHFA Total	Alternative Total	Weight	Odds Ratio IV, Random, 95% CI	Risk of Bias A B C D E F
Hart 2018 (1)	0.1655	0.2592	542	574	66.6%	1.18 [0.71 , 1.96]	+ + − + + −
Reavley 2018 (2)	0.8484	0.4707	208	78	33.4%	2.34 [0.93 , 5.88]	+ + − + + −
Total (95% CI)			**750**	**652**	**100.0%**	**1.48 [0.79 , 2.79]**	

Heterogeneity: Tau² = 0.09; Chi² = 1.62, df = 1 (P = 0.20); I² = 38%
Test for overall effect: Z = 1.22 (P = 0.22)
Test for subgroup differences: Not applicable



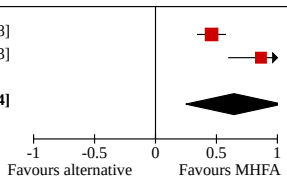
Footnotes
(1) This is a cluster RCT and we have used the authors' estimate of the odds ratio.
(2) We have combined the two MHFA arms and calculated the odds ratio

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 3.2. Comparison 3: MHFA training versus alternative intervention, Outcome 2: Trainee beliefs about treatment: depression, post-intervention

Study or Subgroup	Std. Mean Difference	SE	MHFA Total	Alternative Total	Weight	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E F
Hart 2018 (1)	0.46	0.0607	542	574	54.6%	0.46 [0.34 , 0.58]	+ + − + + −
Reavley 2018 (2)	0.865	0.137	208	77	45.4%	0.86 [0.60 , 1.13]	+ + − + + −
Total (95% CI)			**750**	**651**	**100.0%**	**0.64 [0.25 , 1.04]**	

Heterogeneity: Tau² = 0.07; Chi² = 7.31, df = 1 (P = 0.007); I² = 86%
Test for overall effect: Z = 3.19 (P = 0.001)
Test for subgroup differences: Not applicable



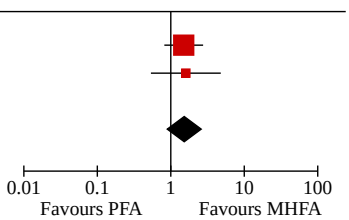
Footnotes
(1) This is a cluster RCT and we have used the authors' estimate of the SMD
(2) We calculated the combined SMD and SE from the SMD figures in Table 3 in the study paper

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 3.3. Comparison 3: MHFA training versus alternative intervention, Outcome 3: Trainee vignette recognition: depression/suicidality, one year plus

Study or Subgroup	log[Odds Ratio]	SE	MHFA Total	PFA Total	Weight	Odds Ratio IV, Random, 95% CI
Hart 2018	0.405465	0.30996	465	429	76.4%	1.50 [0.82 , 2.75]
Reavley 2018	0.471714	0.558369	164	79	23.6%	1.60 [0.54 , 4.79]
Total (95% CI)			**629**	**508**	**100.0%**	**1.52 [0.90 , 2.59]**

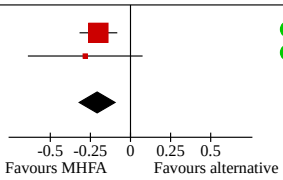
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.92); I² = 0%
Test for overall effect: Z = 1.55 (P = 0.12)
Test for subgroup differences: Not applicable

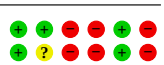


Analysis 3.4. Comparison 3: MHFA training versus alternative intervention, Outcome 4: Trainee stigma: social distance (depression): post-intervention

Study or Subgroup	Std. Mean Difference	SE	MHFA Total	Alternative Total	Weight	Std. Mean Difference IV, Random, 95% CI
Hart 2018 (1)	-0.2	0.06	542	574	90.2%	-0.20 [-0.32 , -0.08]
Reavley 2018 (2)	-0.2822	0.1824	207	77	9.8%	-0.28 [-0.64 , 0.08]
Total (95% CI)			**749**	**651**	**100.0%**	**-0.21 [-0.32 , -0.10]**

Heterogeneity: Tau² = 0.00; Chi² = 0.18, df = 1 (P = 0.67); I² = 0%
Test for overall effect: Z = 3.65 (P = 0.0003)
Test for subgroup differences: Not applicable





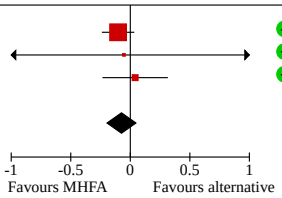
Footnotes
(1) This is a cluster RCT and we have used the authors' estimate of the MD
(2) Two MHFA arms combined; dichotomous data converted into an SMD. Direction of effect for this outcome reversed to be consistent with the Hart 2018 outcome.

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

Analysis 3.5. Comparison 3: MHFA training versus alternative intervention, Outcome 5: Trainee mental health: one year plus

Study or Subgroup	Std. Mean Difference	SE	Experimental Total	Control Total	Weight	Std. Mean Difference IV, Random, 95% CI
Hart 2018 (1)	-0.102589	0.069441	433	399	79.4%	-0.10 [-0.24 , 0.03]
Morgan 2019 (2)	-0.053	0.6016	13	12	1.1%	-0.05 [-1.23 , 1.13]
Reavley 2018 (3)	0.040796	0.140094	156	75	19.5%	0.04 [-0.23 , 0.32]
Total (95% CI)			**602**	**486**	**100.0%**	**-0.07 [-0.20 , 0.05]**

Heterogeneity: Tau² = 0.00; Chi² = 0.84, df = 2 (P = 0.66); I² = 0%
Test for overall effect: Z = 1.20 (P = 0.23)
Test for subgroup differences: Not applicable



Footnotes
(1) This is a cluster RCT and we have used the authors' estimate of the MD converted into an SMD
(2) We have converted the dichotomous data into an odds ratio and then into an SMD
(3) We have combined the data from the two intervention groups and calculated an SMD

Risk of bias legend
(A) Bias arising from the randomization process
(B) Bias due to deviations from intended interventions
(C) Bias due to missing outcome data
(D) Bias in measurement of the outcome
(E) Bias in selection of the reported result
(F) Overall bias

ADDITIONAL TABLES

Table 1. Risk of Bias 2 Tool: Author-formulated decision-rules

Domain	Decision-rule
Bias due to deviations from intended interventions	We looked for evidence to assess whether interventions had been delivered in a way that would reflect regular practice. We therefore judged that if uptake was not high, this would be likely to reflect practice in a non-trial setting and was not a potential source of bias. Conversely, if uptake was very

Table 1. Risk of Bias 2 Tool: Author-formulated decision-rules *(Continued)*

	high, we judged that this was not likely to reflect regular practice and was likely to be an artefact of the trial context. This therefore was a potential source of bias.
Bias due to deviations from intended interventions	We looked for evidence for 'contamination' between trial arms. We judged that contamination was a possibility when there was evidence of an impact of an intervention in a control arm. This could occur when participants in the control arm sought out or otherwise accessed elements of the intervention delivered to the intervention arm.

Table 2. Sensitivity analysis: using a fixed-effect model instead of a random-effects model

COMPARISON 1: MHFA VERSUS NO INTERVENTION

Outcome	Analysis	Random-effect (95% CI)	Fixed-effect (95% CI)
Mental health: individuals, 6 months to a year	Analysis 1.1	OR 0.88 (0.61 to 1.28)	OR 0.77 (0.65 to 0.90)
Mental health knowledge: individuals - vignette recognition, 6 months to a year	Analysis 1.3	OR 1.51 (0.80 to 2.82)	OR 1.26 (0.88 to 1.81)
Mental health stigma: individuals - social distance, 6 months to a year	Analysis 1.8	OR 1.12 (0.58 to 2.15)	OR 1.17 (0.72 to 1.92)
Mental health knowledge: trainees - vignette recognition (depression), post intervention	Analysis 1.11	OR 2.91, 95% CI 1.36 to 6.24)	OR 4.10 (2.86 to 5.86)
Mental health knowledge: trainees - vignette recognition (depression), 6 months plus	Analysis 1.13	OR 2.62, 95% CI 1.21 to 5.68)	OR 3.50 (2.61, 4.70)
Mental health knowledge: trainees - beliefs about treatment (depression), 6 months to a year	Analysis 1.14	SMD 0.18, 95% CI -0.03 to 0.39)	SMD 0.17 (0.05, 0.30)
Mental health stigma: trainees - perceived stigma, post-intervention	Analysis 1.16	SMD 0.18 (-0.31 to 0.67)	SMD 0.21 (-0.02 to 0.44)
Mental health stigma: trainees - social distance (depression), post-intervention	Analysis 1.17	SMD -0.40, 95% CI -1.10 to 0.31	SMD -0.57 (-0.73, -0.41)
Mental health stigma: trainees - personal stigma, 6 months to a year	Analysis 1.19	SMD 0.27 (-0.07 to 0.60)	SMD 0.22 (0.07 to 0.38)
Self-reported contacts: trainees -post-intervention	Analysis 1.21	RR 1.05 (0.82 to 1.36)	RR 1.07 (0.93 to 1.24)
Mental health:trainees, post-intervention	Analysis 1.23	OR 0.48, 95% CI 0.18 to 1.26	OR 0.34 (0.25 to 0.47)
Mental health: trainees, -up to 6 months	Analysis 1.24	SMD 0.10 (-0.07 to 0.26)	SMD 0.09 (-0.05 to 0.23)

Table 2. Sensitivity analysis: using a fixed-effect model instead of a random-effects model *(Continued)*

Mental health: trainees, 6 months to a year	Analysis 1.25	OR 0.40, 95% CI 0.17 to 0.96	OR 0.32 (0.23, 0.44)
COMPARISON 3: MHFA VERSUS ALTERNATIVE INTERVENTION			
Mental health knowledge: trainees - vignette recognition, post-intervention	Analysis 3.1	OR 1.48 (0.79 to 2.79)	OR 1.38 (0.89 to 2.16)
Mental health knowledge: trainees -beliefs about treatment (depression), post-intervention	Analysis 3.2	SMD 0.64 (0.25 to 1.04)	SMD 0.53 (0.42 to 0.64)

CI: confidence interval
MHFA: mental health first aid
OR: odds ratio
RR: risk ratio
SMD: standardised mean difference

APPENDICES

Appendix 1. Review searches

Searches were originally conducted for this review in July 2017 and February 2018. Further annual updates were conducted between January 2019 and May 2022. Before 2019 database searches were not restricted by study design. Given the growing body of evidence from randomised trials identified from the review's original searches, we applied an RCT filter to Embase, MEDLINE and PsycInfo when running update searches from 2019 onwards.

The Cochrane Common Mental Disorders Controlled Trials Register (CCMDCTR)

The CCMDCTR-Studies and References Register was cross-searched (all years to June 2016) using the following terms: (((mental or psych*) near first aid) or MHFA)

The CCMDCTR is an archived resource, current to June 2016 only. Reports of trials for inclusion in the Group's register were collated from routine (weekly), generic searches for all RCTs within the scope of this Group. The databases routinely searched included MEDLINE (1950 to 2016), Embase (1974 to 2016), PsycINFO (1967 to 2016) and the Cochrane Central Register of Controlled Trials (CENTRAL). Review-specific searches were also conducted on additional databases where necessary (e.g. education databases). Reports of trials were also sourced from international and drug company trial registers. Further details of the CCMDCTR are available on request from Cochrane.

Cochrane Central Register of Controlled Trials (CENTRAL) via Wiley

#1 (mental* near (first next aid*)):ti,ab,kw

#2 MHFA:ti,ab,kw

#3 #1 or #2

#4 MeSH descriptor: [Mental Disorders] explode all trees

#5 MeSH descriptor: [Depression] this term only

#6 MeSH descriptor: [Anxiety] explode all trees

#7 MeSH descriptor: [Suicide] explode all trees

#8 MeSH descriptor: [Self-Injurious Behavior] explode all trees

#9 MeSH descriptor: [Drug Overdose] this term only

#10 MeSH descriptor: [Mentally Ill Persons] this term only

#11 MeSH descriptor: [Mental Health] this term only

#12 (depression* or depressive*):ti,ab,kw

#13 (anxiet* or panic):ti,ab,kw

#14 (suicid* or parasuicid* or self-harm* or self-injur*):ti,ab,kw

#15 (overdose* or (over next dose*)):ti,ab,kw

#16 (psychosis or psychoses or psychotic*):ti,ab,kw

#17 ((eating next disorder*) or bulimia* or (binge next eating) or anorexia*):ti,ab,kw

#18 (mental* near/3 (disorder* or disease* or ill or illness* or problem* or crisis or distress or issue* or impairment*)):ti,ab,kw

#19 (psychiatric near/3 (disorder* or disease* or ill or illness* or problem* or crisis or distress or issue* or impairment*)):ti,ab,kw

#20 (psychological near/3 (disorder* or disease* or ill or illness* or problem* or crisis or distress or issue* or impairment*)):ti,ab,kw

#21 {or #4-#20}

#22 MeSH descriptor: [First Aid] this term only

#23 (first next aid*):ti,ab,kw

#24 #22 or #23

#25 #21 and #24

#26 #3 or #25

#27 MeSH descriptor: [Gatekeeping] this term only

#28 (gatekeep* near (train* or program* or educat*)):ti,ab,kw

#29 #27 or #28

#30 #21 and #29

#31 #26 or #30

#32#26 or #30 in Trials

From 2019 onwards, CENTRAL was searched using terms for MHFA only.

Cochrane Library: Central Register of Controlled Trials (CENTRAL)

#1 ((mental* NEAR ((first next aid*) or firstaid*))):ti,ab,kw

#2 MHFA:ti,ab,kw

#3 (#1 or #2) n=32

Ovid MEDLINE(R) All <1946 onwards>

Search Strategy:

---

1 (mental$ adj6 first aid$).ti,ab.

2 MHFA.ti,ab.

3 1 or 2

4 exp Mental Disorders/

5 Depression/

6 exp Anxiety/

7 exp Suicide/

8 exp Self-Injurious Behavior/

9 Drug Overdose/

10 Mentally Ill Persons/

11 Mental Health/

12 (depression$ or depressive$).ti,ab.

13 (anxiet$ or panic).ti,ab.

14 (suicid$ or parasuicid$ or self-harm$ or self-injur$).ti,ab.

15 (overdose$ or over dose$).ti,ab.

16 (psychosis or psychoses or psychotic$).ti,ab.

17 (eating disorder$ or bulimia$ or binge eating or anorexia$).ti,ab.

18 (mental$ adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

19 (psychiatric adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

20 (psychological adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

21 or/4-20

22 First Aid/

23 first aid$.ti,ab.

24 22 or 23

25 21 and 24

26 3 or 25

27 Gatekeeping/

28 (gatekeep$ adj6 (train$ or program$ or educat$)).ti,ab.

29 27 or 28

30 21 and 29

31 26 or 30

32 exp animals/ not humans/

33 31 not 32

Ovid Embase <1974 onwards>

Search Strategy:

---

1 (mental$ adj6 first aid$).ti,ab.

2 MHFA.ti,ab.

3 1 or 2

4 exp mental disease/

5 exp anxiety/

6 exp suicidal behavior/

7 automutilation/

8 drug overdose/

9 mental patient/

10 exp mental health/

11 (depression$ or depressive$).ti,ab.

12 (anxiet$ or panic).ti,ab.

13 (suicid$ or parasuicid$ or self-harm$ or self-injur$).ti,ab.

14 (overdose$ or over dose$).ti,ab.

15 (psychosis or psychoses or psychotic$).ti,ab.

16 (eating disorder$ or bulimia$ or binge eating or anorexia$).ti,ab.

17 (mental$ adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

18 (psychiatric adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

19 (psychological adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

20 or/4-19

21 first aid/

22 first aid$.ti,ab.

23 21 or 22

24 20 and 23

25 3 or 24

26 (gatekeep$ adj6 (train$ or program$ or educat$)).ti,ab.

27 20 and 26

28 25 or 27

29 (animal/ or nonhuman/) not exp human/

30 28 not 29

Ovid PsycINFO <1967 onwards>

Search Strategy:

---

1 (mental$ adj6 first aid$).tw.

2 MHFA.tw.

3 1 or 2

4 exp mental disorders/ 5 "depression (emotion)"/ 6 exp anxiety/

7 exp suicide/

8 attempted suicide/

9 suicidal ideation/

10 suicide prevention/

11 suicidology/

12 exp self-injurious behavior/

13 drug overdoses/

14 exp mental health/

15 "mental illness (attitudes toward)"/

16 (depression$ or depressive$).ti,ab.

17 (anxiet$ or panic).ti,ab.

18 (suicid$ or parasuicid$ or self-harm$ or self-injur$).ti,ab.

19 (overdose$ or over dose$).ti,ab.

20 (psychosis or psychoses or psychotic$).ti,ab.

21 (eating disorder$ or bulimia$ or binge eating or anorexia$).ti,ab.

22 (mental$ adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

23 (psychiatric adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

24 (psychological adj3 (disorder$ or disease$ or ill or illness$ or problem$ or crisis or distress or issue$ or impairment$)).ti,ab.

25 or/4-24

26 first aid$.tw.

27 25 and 26

28 3 or 27

29 (gatekeep$ adj6 (train$ or program$ or educat$)).tw.

30 25 and 29

31 28 or 30

32 (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,sh.

33 31 not 32

Searches of the Ovid databases were conducted concurrently, using a multifile search, from 2019 onwards.

Ovid cross-search: PsycINFO <2019 to 24 May 2022>, Embase <2019 to 24 May 2022>, Ovid MEDLINE(R) ALL <2019 to 24 May 2022>

Search Strategy:

---

1 (mental$ adj6 (first aid* or firstaid*)).ti,ab,kf,kw,id.

2 MHFA.ti,ab,kf,kw,id.

3 mental health first aid.sh.

4 exp Mental Disorders/ or exp Mental Disease/

5 Mental Health/

6 (Depression or Depressive).hw.

7 exp Anxiety/ or exp Anxiety Disorders/

8 exp Self-Injurious Behavior/

9 exp Suicide/ or exp Suicidal Behavior/

10 Drug Overdose/ or exp Substance-Related Disorders/

11 mental*.hw.

12 (depression* or depressive*).ti,ab,kf,kw,id.

13 (anxiet* or panic).ti,ab,kf,kw,id.

14 (suicid* or parasuicid* or self-harm* or self-injur*).ti,ab,kf,kw,id.

15 (overdose* or over dose*).ti,ab,kf,kw,id.

16 (psychosis or psychoses or psychotic*).ti,ab,kf,kw,id.

17 (eating disorder* or bulimi* or binge eating or anorexia nervosa).ti,ab,kf,kw,id.

18 (mental* adj3 (disorder* or disease* or ill or illness* or problem* or crisis or distress or issue* or impairment*)).ti,ab,kf,kw,id.

19 (psychiatric* adj3 (disorder* or disease* or ill or illness* or problem* or crisis or distress or issue* or impairment*)).ti,ab,kf,kw,id.

20 (psychological* adj3 (disorder* or disease* or ill or illness* or problem* or crisis or distress or issue* or impairment*)).ti,ab,kf,kw,id.

21 or/4-20

22 first aid*.ti,ab,kf,kw,id,hw.

23 21 and 22

24 gatekeep*.ti,ab,kf,kw,id,hw.

25 (gatekeep* adj6 (train* or program* or educat*)).ti,ab,kf,kw,id.

26 24 or 25

27 21 and 26

28 (train* adj5 (aware* or manag*) adj5 suicid*).ti,ab,kf,kw,id.

29 (train* adj5 (aware* or manag*) adj5 mental*).ti,ab,kf,kw,id.

30 (train* adj5 (aware* or manag*)).ti.

31 21 and 30

32 or/1-3,23,27-29,31

33 (RCT or random*).mp.

34 randomized controlled trial.pt.

35 randomized controlled trial/

36 controlled clinical trial/

37 placebo.mp.

38 trial.ti.

39 (group?.ab. or study.ti,ab.) and (control* or waitlist* or wait* list* or ((treatment or care) adj2 usual) or no? treatment).ti,ab,kf,kw,id.

40 or/33-39

41 32 and 40

42 remove duplicates from 41

PubMed

http://www.ncbi.nlm.nih.gov/pubmed/

Search (((((((((("Gatekeeping"[Mesh:NoExp]) OR ((gatekeep*[Title/Abstract]) AND (train* [Title/Abstract] OR program*[Title/Abstract] OR educat*[Title/Abstract])))) AND ((((((((((((((("Mental Disorders"[Mesh]) OR "Depression"[Mesh:NoExp]) OR "Anxiety"[Mesh]) OR "Suicide"[Mesh]) OR "Self-Injurious Behavior"[Mesh]) OR "Drug Overdose"[Mesh]) OR "Mentally Ill Persons"[Mesh:NoExp]) OR "Mental Health"[Mesh:NoExp]) OR ((depression* [Title/Abstract] OR depressive*[Title/Abstract]))) OR ((anxiet*[Title/Abstract] OR panic[Title/Abstract]))) OR ((suicid*[Title/Abstract] OR parasuicid*[Title/Abstract] OR self-harm* [Title/Abstract] OR self-injur*[Title/Abstract]))) OR ((overdose*[Title/Abstract] OR over-dose* [Title/Abstract]))) OR ((psychosis[Title/Abstract] OR psychoses[Title/Abstract] OR psychotic* [Title/Abstract]))) OR (("eating disorder"[Title/Abstract] OR "eating disorders"[Title/Abstract] OR bulimia*[Title/Abstract] OR "binge eating"[Title/Abstract] OR anorexia*[Title/Abstract]))) OR ((((mental[Title/Abstract] OR psychiatric[Title/Abstract] OR psychological[Title/Abstract]))) AND ((disorder*[Title/Abstract] OR disease*[Title/Abstract] OR ill[Title/Abstract] OR illness* [Title/Abstract] OR problem*[Title/Abstract] OR crisis[Title/Abstract] OR distress[Title/Abstract] OR issue*[Title/Abstract] OR impairment*[Title/Abstract])))))) OR ((((((mental$[Title/Abstract]) AND ("first aid"[Title/Abstract] OR "first aider"[Title/Abstract] OR "first aiders"[Title/Abstract] OR "first aids"[Title/Abstract]))) OR MHFA[Title/Abstract])) OR ((((("First Aid"[Mesh]) OR (("first aid" [Title/Abstract] OR "first aider"[Title/Abstract] OR "first aiders"[Title/Abstract] OR "first aids" [Title/Abstract]))))) AND ((((((((((((((("Mental Disorders"[Mesh]) OR "Depression"[Mesh:NoExp]) OR "Anxiety"[Mesh]) OR "Suicide"[Mesh]) OR "Self-Injurious Behavior"[Mesh]) OR "Drug Overdose"[Mesh]) OR "Mentally Ill Persons"[Mesh:NoExp]) OR "Mental Health"[Mesh:NoExp]) OR ((depression*[Title/Abstract] OR depressive*[Title/Abstract]))) OR ((anxiet*[Title/Abstract] OR panic[Title/Abstract]))) OR ((suicid*[Title/Abstract] OR parasuicid*[Title/Abstract] OR self-harm*[Title/Abstract] OR self-injur*[Title/Abstract]))) OR ((overdose*[Title/Abstract] OR over- dose*[Title/Abstract]))) OR ((psychosis[Title/Abstract] OR psychoses[Title/Abstract] OR psychotic*[Title/Abstract]))) OR (("eating disorder"[Title/Abstract] OR "eating disorders" [Title/Abstract] OR bulimia*[Title/Abstract] OR "binge eating"[Title/Abstract] OR anorexia* [Title/Abstract]))) OR ((((mental[Title/Abstract] OR psychiatric[Title/Abstract] OR psychological[Title/Abstract]))) AND ((disorder*[Title/Abstract] OR disease*[Title/Abstract] OR ill[Title/Abstract] OR illness*[Title/Abstract] OR problem*[Title/Abstract] OR crisis[Title/Abstract] OR distress[Title/Abstract] OR issue*[Title/Abstract] OR impairment*[Title/Abstract])))))))) NOT ((animals [mh] NOT humans [mh])))) AND ((pubstatusaheadofprint OR publisher[sb] OR pubmednotmedline[sb]))

Grey Literature

Proquest Dissertations & Theses: UK & Ireland http://www.proquest.com/

(TI,AB,SU(mental* NEAR/6 ("first aid" OR "first aider" OR "first aiders" OR "first aids")) OR TI,AB,SU(MHFA)) OR ((TI,AB,SU(depression* OR depressive*) OR TI,AB,SU(anxiet* OR panic) OR TI,AB,SU(suicid* OR parasuicid* OR self-harm* OR self-injur*) OR TI,AB,SU(overdose* OR over-dose*) OR TI,AB,SU(psychosis OR psychoses OR psychotic*) OR TI,AB,SU("eating disorder" OR "eating disorders" OR bulimia* OR "binge eating" OR anorexia*) OR TI,AB,SU(mental* NEAR/3 (disorder* OR disease* OR ill OR illness* OR problem* OR crisis OR distress OR issue* OR impairment*)) OR TI,AB,SU(psychiatric NEAR/3 (disorder* OR disease* OR ill OR illness* OR problem* OR crisis OR distress OR issue* OR impairment*)) OR TI,AB,SU(psychological NEAR/3 (disorder* OR disease* OR ill OR illness* OR problem* OR crisis OR distress OR issue* OR impairment*))) AND TI,AB,SU("first aid" OR "first aider" OR "first aiders" OR "first aids")) OR ((TI,AB,SU(depression* OR depressive*) OR TI,AB,SU(anxiet* OR panic) OR TI,AB,SU(suicid* OR parasuicid* OR self-harm* OR self-injur*) OR TI,AB,SU(overdose* OR over-dose*) OR TI,AB,SU(psychosis OR psychoses OR psychotic*) OR TI,AB,SU("eating disorder" OR "eating disorders" OR bulimia* OR "binge eating" OR anorexia*) OR TI,AB,SU(mental* NEAR/3 (disorder* OR disease* OR ill OR illness* OR problem* OR crisis OR distress OR issue* OR impairment*)) OR TI,AB,SU(psychiatric NEAR/3 (disorder* OR disease* OR ill OR illness* OR problem* OR crisis OR distress OR issue* OR impairment*)) OR TI,AB,SU(psychological NEAR/3 (disorder* OR disease* OR ill OR illness* OR problem* OR crisis OR distress OR issue* OR impairment*))) AND TI,AB,SU(gatekeep* NEAR/6 (train* OR program* OR educat*)))

From 2019 onwards all theses databases were searched using terms for MHFA only.

Search: "mental health first aid" or MHFA

International Trial Registers

ClinicalTrials.gov https://clinicaltrials.gov

((mental AND “first aid”) OR MHFA)

WHO International Clinical Trials Registry Platform www.who.int/ictrp/search/en/

1. Mental* AND first aid*

2. MHFA

From 2019 the trial registers were searched using the following terms:

“mental health first aid" or MHFA

Trial register records were also captured via CENTRAL on the Cochrane Library.

Conference Proceedings

Web of Science Conference Proceedings (Calvairate analytics)

Conference Proceedings Citation Index- Science (CPCI-S) --1990-onwards

Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990- onwards

CPCI-S, CPCI-SSH Timespan=All years

1. TOPIC: (Mental* AND "first aid*")

2. TOPIC: (MHFA)

3. #2 OR #1

Open Grey http://www.opengrey.eu/ (searched to 2017 only)

mental* and first aid

****

Appendix 2. Sample Summary of Findings Table

Summary of findings:

MHFA compared to no intervention for improving mental health and well-being

Patient or population: Any

Setting: Any setting

Intervention: MHFA

Comparison: no intervention

Outcomes	**Anticipated absolute effects*** (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with no intervention	**Risk with MHFA**				
Mental health and well-being of recipients (Mental health) assessed with: Validated measure follow up: range 6 months to 1 years	The mean mental health and well-being of recipients was 0	The mean mental health and well-being of recipients in the intervention group was 0 (0 to 0)	-	(studies)	-	
Mental health service usage (Service usage) assessed with: Objective service records follow up: range 6 months to 1 years	The mean mental health service usage was 0	The mean mental health service usage in the intervention group was 0 (0 to 0)	-	(studies)	-	
Adverse effects (Adverse effects)	0 per 1,000	**0 per 1,000** (0 to 0)	not estimable	(studies)	-	

(Continued)

assessed with: Documented events follow up: range 6 months to 1 years

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the __relative effect__ of the intervention (and its 95% CI).

CI: Confidence interval

GRADE Working Group grades of evidence
High certainty: We are very confident that the true effect lies close to that of the estimate of the effect
Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

HISTORY

Protocol first published: Issue 9, 2018

CONTRIBUTIONS OF AUTHORS

Drafting of protocol: RR, HD, GW, DM, and RC

Selection of studies: RR, HD, LR and RC

Extraction of data: RR, HD and LR

Data entry into RevMan: RR

Analysis and interpretation of analysis: RR, HD, NM and RC

Drafting of review: RR, HD and RC

Topic expertise and editing: DM

DECLARATIONS OF INTEREST

Rachel Richardson works as the manager of the Cochrane Methods Support Unit and provides editorial advice to Cochrane authors and editors, but had no part in the editorial process of this review.

Holly Dale is employed as Lead Lived Experience Practitioner at Berkshire Healthcare FoundationTrust. She is not involved in MHFA training nor is it part of her role.

Lindsay Robertson has worked as an editor for the Cochrane Common Mental Disorders Group, but had no part in the editorial process of this review.

Nick Meader was the Deputy Coordinating Editor for the Cochrane Common Mental Disorders Group, but had no part in the editorial process of this review.

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Rachel Churchill was the Coordinating Editor, Cochrane Common Mental Disorders Group, but had no part in the editorial process of this review.

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Internal sources

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External sources

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We changed the terminology used in the protocol, as it became clear that it was confusing. Instead of 'recipients of the MHFA intervention', we now refer to 'individuals in communities in which MHFA training is implemented'.

We did not anticipate the need to convert data from a dichotomous to a continuous format and vice-versa. There were several instances where this was necessary. We also did not anticipate that we would use data from two different groups of participants within the same meta-analysis. There were several instances where we performed such analyses.

We originally intended to calculate pooled risk ratios (RRs) from 2x2 tables reported in the papers. However, we identified a number of cluster-randomised trials where the ideal data to extract are direct estimates and their standard errors (SEs) adjusted appropriately for clustering (Cochrane Handbook, section 16.3.3). Estimates appropriately adjusted for the cluster design were typically log odds ratios (ORs) and SEs we therefore chose to meta-analyse these data using the generic inverse-variance method rather than pool RRs.

INDEX TERMS

Medical Subject Headings (MeSH)

Databases, Bibliographic; *Drug-Related Side Effects and Adverse Reactions; First Aid; *Mental Disorders [therapy]; Mental Health

MeSH check words

Humans