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Mental Health First Aid is an effective public health intervention for improving knowledge, attitudes, and behaviour: A meta-analysis

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Abstract

Mental Health First Aid (MHFA) is a standardized, psychoeducational programme developed to empower the public to approach, support and refer individuals in distress by improving course participants' knowledge, attitudes and behaviours related to mental ill-health. The present paper aims to synthesize published evaluations of the MHFA programme in a meta-analysis to estimate its effects and potential as a public mental health awareness-increasing strategy. Fifteen relevant papers were identified through a systematic literature search. Standardized effect sizes were calculated for three different outcome measures: change in knowledge, attitudes, and helping behaviours. The results of the meta-analysis for these outcomes yielded a mean effect size of Glass's $\Delta = 0.56$ (95% CI = 0.38 – 0.74; $p < 0.001$), 0.28 (95% CI = 0.22 – 0.35; $p < 0.001$) and 0.25 (95% CI = 0.12 – 0.38; $p < 0.001$), respectively. Results were homogenous, and moderator analyses suggested no systematic bias or differences in results related to study design (with or without control group) or 'publication quality' (journal impact factor). The results demonstrate that MHFA increases participants' knowledge regarding mental health, decreases their negative attitudes, and increases supportive behaviours toward individuals with mental health problems. The MHFA programme appears recommendable for public health action.

Background

Mental health problems are major contributors to the global burden of disease, with mental and substance abuse disorders accounting for 7.4% of the total disease burden in 2010, as measured by disability-adjusted life years (DALYs) (Whiteford et al., 2013). In the European Union (EU) alone, this number was more than 25% in 2010 for mental and other brain disorders, which are also the largest contributors to the morbidity burden (Wittchen et al., 2011). The most frequent mental disorders are depression, anxiety and substance abuse (Whiteford et al., 2013). These mental disorders further represent one of the most important risk factors for suicide, and constitute one of the largest public health problems in the world (Ferrari et al., 2014).

Although treatment for these disorders exists, only a minority of individuals experiencing mental health problems receive it. It has been estimated that in serious cases of mental disorders alone, only 11% to 62.1% receive treatment over the course of a year (Wang et al., 2007). There are various putative explanations for this. Individuals with mental health problems may be unaware that they are experiencing a diagnosable and treatable condition, or in regions where professional care is available, they may be unaware of how it can be accessed. The general public could be an important asset in these situations. Social contacts could inform or refer afflicted individuals to professionals and may even provide actual support during mental health crises. However, stigmatized attitudes and a general lack of knowledge regarding mental ill-health, including causes, determinants and treatment options for various illnesses, or how they might be expressed by affected individuals, constitute serious obstacles to the prospective benefits of social support (Ahmedani, 2011; Baumann, 2007; Hatzenbuehler, 2013; Henderson et al., 2013; Kelly et al., 2007; Rickwood & Thomas, 2012). Thus, it can be assumed that improving the quality and frequency of social support may facilitate earlier detection and referral, which in turn could increase the odds of successful treatment outcome and reduce individual suffering (WHO World Mental Health Survey Consortium, 2004; Wang et al., 2005). An important public health strategy towards a general improvement of the overall mental health in communities might be widespread psychoeducation (Dumesnil & Verger, 2009).

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Mental Health First Aid

Mental Health First Aid (MHFA) is a standardized educational programme developed to combat mental health problems and suicide in the general public by increasing mental health literacy, improving attitudes and stimulating helping behaviours (Kitchener & Jorm, 2002). The programme was originally developed and implemented in Australia (Kitchener & Jorm, 2002) but has since then been adopted in 21 other countries around the world and has been evaluated in several studies (e.g. Kitchener & Jorm, 2004; Massey et al., 2010). MHFA strategies are aimed at the general public, using a similar pedagogical approach as in somatic first aid programmes (e.g. cardiopulmonary resuscitation). One of these is a five-step action plan for mental health first aid, which describes how to practically assist individuals in mental health crises.

The course programme aims to increase participants' knowledge about mental health in general as well as about common disorders (e.g., depression, anxiety, psychosis, substance abuse, self-harm, suicidal behaviours) and available treatment options. Another aim is to reduce stigma surrounding mental disorders, as negative attitudes have an adverse impact on supportive and help-seeking behaviours (Kitchener & Jorm, 2006). By teaching proactive techniques that can facilitate healthy relations and communication, MHFA aims to equip the participant with skills to provide help to a person in distress or someone who is suicidal. Course participants learn how to recognize psychological distress and how to approach and provide help to a person developing mental health problems or those in a mental health crisis, until appropriate professional treatment is received or until the crisis is resolved. The standard version of the MHFA programme targets mental problems in the adult population, while another version is tailored for adults that come in contact with young people with mental health problems.

The key messages of MHFA and the contents of each course module are based on scientific evidence, established through comprehensive literature reviews or, regarding issues where comprehensive evidence does not exist, on expert consensus achieved using the Delphi method (Beehler et al., 2013; Berk et al., 2011; Clyne et al., 2012; Colucci et al., 2010a, 2010b, 2011; Hart et al., 2009, 2010; Hemmings et al., 2009; Jorm et al., 2008; Kelly et al., 2008a, 2008b, 2009, 2010; Kingston et al., 2009, 2011; Langlands et al., 2008a, 2008b; McGinn et al., 2012; McIntyre et al., 2010; Morgan & Jorm, 2009; Norder et al., 2012; Reavley et al., 2012, 2013; Ross et al., 2012; Ryan et al., 2011). For an in depth description of the MHFA programme, its development and roll-out, see Kitchener and Jorm (2008).

The MHFA public health intervention is spread using the cascade principle: a small team of MHFA trainers, highly experienced in training, deliver a five-day course for carefully selected individuals, who are trained to become MHFA instructors. The selection process emphasizes pedagogical skills and interest in the topic. Then MHFA instructors deliver two-day courses open to the general public. The programme and all included materials are standardized to ensure the homogeneity of the delivered information. The core of the educational material is the first aider's manual, which contains all essential parts of the course content. This is complemented by instructor guidelines, PowerPoint slides and exercises. On an international level, the course content is carefully adapted to each country's specific conditions by professionals. This adaptation is done in close collaboration with MHFA-Australia in order to ensure that the standardized educational procedures are followed. A literature review by (Kitchener & Jorm, 2006) gives a summary of the results from three evaluation studies on MHFA, but additional studies have since been conducted and the results have never been quantitatively synthesized.

Objectives and hypotheses

The aim of this study is to conduct a meta-analysis estimating the effects of the MHFA programme, both for adults and young people, based on results published up to March 2014 (including non-peer-reviewed literature) and aims at examining changes in: (1) mental health literacy, in terms of knowledge about treatment of common mental health problems as recommended by mental health professionals, and recognition of symptoms of mental ill-health, (2) attitudes towards people suffering from mental health problems and (3) help-related behaviours exhibited by participants of the MHFA programme (i.e. mental health first aiders).

Methods

Identification and selection of studies

PubMed, PsycINFO, Cochrane Library, and Google Scholar were searched for peer-reviewed articles related to MHFA interventions carried out at any point before March 2014. Only papers in the English or Swedish languages were considered. Search terms such as 'mental health first aid', 'MHFA', 'mental health training', 'mental health gatekeeper training', 'mental health gatekeeper' and 'mental health education' were used, as were different combinations of those words. References in relevant articles were also screened for publications of interest. An additional

Google search was made to identify possible grey literature. The aim of this literature search was to obtain original research reporting outcomes of the MHFA programme (standard or youth version). It should be noted that the official length of the programme was originally 9 hours and later extended to 12 hours. Both versions were included in the present meta-analysis.

Studies were included if they met the following criteria: (1) included the standard MHFA or youth programme, (2) included the full course programme (not just a specific module), (3) included an evaluation of the programme, (4) the evaluation was quantitative, (5) included either the 9- or 12-h programme and (6) included at least one out of the three outcome measures used in this meta-analysis (change in knowledge, attitudes and/or behaviour).

Studies were excluded if they met the following criteria: (1) included a modified version of MHFA that was not the standard or the youth version of MHFA, (2) did not include an evaluation of the course programme, or (3) presented only qualitative evaluation data.

Altogether 599 papers were identified, of which 45 met the inclusion criteria on the first round. The majority of these papers were, however, not evaluations of the MHFA programme but Delphi-consensus papers describing the development of different parts of the MHFA material. These were excluded. Two additional evaluations were excluded, one concerning the Internet-based version of MHFA, and the other on a specific eating disorder module. Another three studies were excluded due to lack of a pre-test measure or due to missing all three outcome measures used in this meta-analysis. One paper, exclusively focused on the description of MHFA, was also excluded. A total of 15 papers remained after selection criteria had been applied, and were included in the present meta-analysis.

Study characteristics

Nine of the fifteen selected papers described the results of single-group pre/post studies. The remaining six reported controlled trials, four of which were randomized. In all four randomized control trials, the control group consisted of participants on a course waiting list. Five studies involved interim and long-term follow-up measures, taking place immediately after a course and six months after course completion. Eight studies involved long-term follow-up measures between six weeks to six months and two studies had evaluations immediately after the course completion but no long-term follow-up. Four out of the fifteen studies used intention-to-treat analysis.

Two of the studies were conducted in Sweden, one in Canada, and the remaining twelve in Australia, of which three were early studies that evaluated the 9-h version of the standard programme. A large proportion of subjects were members of the public participating in open courses, with varying demographic characteristics. Nine Australian studies recruited subjects from more specific populations: pharmacy students, Chinese-speaking individuals, Vietnamese-speaking individuals, members of multicultural organizations, employees in government departments (Health and Ageing, and Family and Community Services), workers in agricultural-related services, rural football club leaders, advisory and extension agents in rural farming communities and high school teachers. The majority of subjects were female.

Outcome measures

Outcome measures were fairly consistent across studies. All 15 studies used similar data acquisition tools and psychometric scales to measure change in knowledge, attitudes and behaviour. Although most studies reported a number of different variables for 'knowledge', 'attitudes' and 'behaviour' outcomes, most had used at least one common quantitative measure of each of the three areas. Qualitative interview data were not considered for the present meta-analysis. The outcome measures selected for this meta-analysis are as follows:

Knowledge: Data regarding 'knowledge' were extracted from two scales then combined for the analysis. The first scale assessed participants' beliefs about effective treatment methods of common mental health problems. Participants' answers to test questions in this scale were compared with 'correct' answers (obtained through experts' consensus in Delphi studies and systematic reviews). The aim of the questionnaire was to measure the degree of the agreement between participants' answers and the 'correct' answers, before and after the course. The second scale was a measure of participants' ability to accurately identify a mental health problem experienced by a person. Background information and symptoms were described in a vignette.

At least one of these scales was reported in all 15 papers, although the results were sometimes calculated using different statistical methods. When available, effect sizes from the two scales were extracted separately and pooled through a random effects model.

Attitudes: Data regarding 'attitudes' were extracted from studies that had used modified versions of the social distance scale (Bogardus, 1947). Participants were asked to read two scenarios: one regarding an individual suffering from depression, and the other regarding an individual suffering from schizophrenia. They were then asked to rate a number of items measuring

attitudes towards these individuals. Effect sizes were extracted for the social distance scale. In papers where a combined effect size was not reported, this was calculated by extracting data separately for each item and pooling them through a random effects model.

Behaviour: Behaviour-related changes were measured by several different items within different studies. Some items focused on the participant's 'confidence' to approach and help a person with mental health problems, while other items regarded the participant's 'intent' to do so. The variable selected for this meta-analysis however, was an item used to measure the actual number of times when help had been provided to another person during the time between course completion and follow-up measures (i.e. between 6 weeks to 6 months). This variable was selected because, among those available, it was considered to be the most valid measure of actual behavioural change. Nine of the fifteen studies reported these data.

Statistical methods (meta-analyses)

All statistical analyses were made in Meta53 software (Schwarzer, 1989) and used an alpha level set to 0.05. In studies where t-tests or ANOVA had been used, standardized effect sizes were extracted using the method described by Durlak (2009). Odds ratios were converted to standardized effect sizes using the method described by Chinn (2000). Effect sizes were based on the difference between scores obtained at baseline and the latest follow-up, while interim measures were ignored.

Although the 15 selected studies involved different designs (use of control subjects or not), they all used similar outcome measures and were hence included in the same primary meta-analysis.

Mixing studies of different designs poses no statistical problems as long as the methodological difference itself does not create logical incomparability (Cooper et al., 2009). Nevertheless, two moderator analyses were carried out to identify possible systematic biases that may arise from different study designs or study quality. In the first analysis, studies using a control group were compared with those using a within-subject pre-post measures design. To assess study quality, papers published in peer-reviewed journals with an impact factor higher than 1.28 (i.e. above the median of the impact factors amongst all the included studies) were compared with those published in journals with a lower impact factor, or without peer review.

A random effects model was used in all analyses, which reduced the effect of large-sample studies, if there was heterogeneity among effect sizes in the sample. If studies were homogenous, studies were weighted similarly to the fixed-effect model.

Results

Main results

The studies included in the performed analyses are listed in Table 1.

Table 1. Characteristics of the 15 studies included in the meta-analyses.

		Effect size			Moderator variables		
Study	Mean sample size used in analyses (treatment versus control)[c]	Knowledge	Attitudes	Behaviours	Control group	Journal impact factor	MHFA version
Kitchener & Jorm, 2002	210	0.31	0.16	0.18	No	2.23[b]	Adult
Jorm et al., 2004	753 (416 vs 337)	0.32	0.17	0.17	Yes	2.23[b]	Adult
Kitchener & Jorm, 2004	301 (146 vs155)	0.22	0.18	0.09	Yes	2.23[b]	Adult
Sartore et al., 2008	61	0.50	0.71	0.13	No	1.55[b]	Adult
Hossain et al., 2009	32	1.33	0.28	–	No	0.6	Adult
Minas et al., 2009	114	0.75	0.16	–	No[a]	1.06	Adult
Jorm et al., 2010	327 (221 vs 106)	0.39	0.28	0.20	Yes	2.23[b]	Youth
Lam et al., 2010	108	0.84	0.42	–	No[a]	1.06	Adult
Massey et al., 2010	84 (28 vs 56)	1.06	–0.31	0.72	Yes	0	Adult
Pierce et al., 2010	23	1.13	–	–	No	1.06	Adult
Kelly et al., 2011	220	0.90	0.43	0.56	No	1.06	Youth
O'Reilly et al., 2011	194 (47 vs 147)	0.15	0.55	–	Yes	3.29[b]	Adult
Morawska et al., 2013	402	0.27	0.35	–	No	1.29[b]	Adult & youth
Svensson et al., 2013a	277 (135 vs 142)	0.36	0.20	0.24	Yes	0	Adult
Svensson et al., 2013b	270	0.75	0.18	0.23	No	0	Adult
Mean effect size Glass's Δ		0.56	0.28	0.25			

[a]The study did not involve long-term follow-up measures.
[b]Impact factor of the journal in which the study was published exceeds the median value.
[c]Separate and unequal sample sizes were sometimes reported for different outcomes within the same study. The average sample size is therefore reported here.

Knowledge: The outcome variable for 'knowledge' included 15 studies (a total sample size of 3807 subjects), with a mean effect size of Glass's $\Delta = 0.56$ (95% confidence interval (CI) ranged from 0.38 to 0.74), $p < 0.001$. Heterogeneity among the effect sizes was indicated: $Q14 = 55.03$, $p < 0.001$. Orwin's fail-safe for critical $d = 0.20$ was 27. (Most but not all studies reported two separate measures of 'knowledge'. These were (a) identification of mental health problems; and (b) knowledge about effective treatments. The result reported here is the combined effect size. Mean effect sizes for the individual measures were 0.63 ($n = 14$) and 0.40 ($n = 13$) respectively, both with $p < 0.0001$).

Attitudes: The outcome variable for 'attitudes' included 14 studies (a total sample size of 3,929 subjects) and had a mean effect size of Glass's $\Delta = 0.28$ (95% CI ranged from 0.22 to 0.35), $p < 0.001$. There was no indication of heterogeneity among the effect sizes: $Q13 = 16.55$, $p = 0.22$. Fail-safe for critical $d = 0.20$ was 6.

Behaviours: The outcome variable for 'behaviour' included nine studies (a total sample size of 2,502 subjects), which yielded a mean effect size of Glass's $\Delta = 0.25$ (95% CI ranged from 0.12 to 0.38), $p < 0.001$. There was no indication of heterogeneity among the effect sizes: $Q8 = 12.24$, $p = 0.14$. Fail-safe for critical $d = 0.20$ was 2.

Post hoc analyses

Although the observed effect sizes among outcomes regarding 'knowledge' were heterogeneous, it should be noted that all effects in all outcomes were in the predicted direction. Outcomes for attitudes and behaviours were homogenous. Nevertheless explorative moderator analyses were performed to investigate how study design or publication 'quality' may have affected the results. The results are described in Table 2.

Moderator analyses compared the effect sizes of controlled versus uncontrolled studies, and studies published in journals with high versus low impact factor (IF). Analyses showed consistently significant results in all groups for all three outcomes. Effect sizes for controlled studies were consistently smaller than for uncontrolled studies in all outcomes, but these differences were not significant. Effect sizes for lower IF were also smaller than high IF in 'knowledge' and 'behaviours', but not in 'attitudes', where the sample of high IF publications was significantly heterogeneous. IF in the 'knowledge' outcome was the only moderator variable for which there was no observed CI overlap between conditions and thus a significant difference (Cumming & Finch, 2005).

Discussion

The aim of the present paper was to assess the effectiveness of the MHFA programme based on previously reported results using meta-analytic methodology. Following a systematic literature search, more than 590 papers were analysed by three reviewers independently, and a total of 15 articles were included. The results indicate that the MHFA programme can be considered effective in increasing knowledge regarding mental health problems. The effect is highly robust and has a moderately high effect size (Glass's $\Delta = 0.56$). Although the studies were not entirely homogenous, they consistently showed a highly significant positive effect, but with varying effect sizes.

Table 2. Results of moderator analyses performed for the main outcome variables 'attitudes', 'knowledge' and 'behaviours': Controlled/uncontrolled study design and impact factor (IF) of the journal in which the article was published (above/below median = 1.28).

Moderator	n = studies (subjects)	Glass's Δ(SE)	95% CI	p-value (Effects)	Q	p-value (Homogeneity)
Knowledge						
Controlled	6 (1875)	0.38 (0.130)	0.13–0.64	0.002	10.60	0.060
Uncontrolled	9 (1932)	0.68 (0.109)	0.46–0.89	<0.001	37.72	<0.001[a]
IF above 1.28	7 (2644)	0.30 (0.040)	0.22–0.37	<0.001	2.40	0.879
IF below 1.28	8 (1163)	0.79 (0.091)	0.61–0.97	<0.001	16.73	0.019[a]
Attitudes						
Controlled	6 (1998)	0.23 (0.046)	0.14–0.32	<0.001	5.59	0.348
Uncontrolled	8 (1931)	0.33 (0.046)	0.24–0.42	<0.001	8.76	0.270
IF above 1.28	7 (2716)	0.31 (0.078)	0.16–0.47	<0.001	12.80	0.046[a]
IF below 1.28	7 (1213)	0.28 (0.058)	0.17–0.39	<0.001	3.75	0.711
Behaviours						
Controlled	5 (1742)	0.24 (0.107)	0.03–0.45	0.013	5.84	0.212
Uncontrolled	4 (760)	0.30 (0.087)	0.13–0.47	<0.001	5.00	0.172
IF above 1.28	5 (1651)	0.16 (0.050)	0.06–0.26	0.001	0.64	0.959
IF below 1.28	4 (851)	0.39 (0.112)	0.17–0.62	<0.001	6.38	0.094

SE, standard error; IF, impact factor.

[a]Indicates statistically significant ($p < 0.05$) heterogeneity amongst the effect sizes within the sample.

The moderator analyses suggested no systematic bias related to study design. Reports that were not peer-reviewed or were published in journals with a lower IF were found to report greater effects. The observed moderate heterogeneity could perhaps be explained by different scoring procedures of the outcome measures. An alternative explanation could be that different study populations had different levels of pre-MHFA knowledge. Populations who knew less about mental health to begin with, increased their knowledge to a greater degree.

The analyses also suggest that participating in a MHFA course effectively decreases negative attitudes toward individuals suffering from mental health problems. The observed difference between intervention and control subjects, as well as in pre-post measures, was highly significant, suggesting a very robust but moderate effect (Glass's $\Delta = 0.28$). Moderator analyses further suggest that the results are independent of study design and quality of publication.

Finally, the results show that the MHFA intervention is effective in increasing help-providing behaviour. Unfortunately, the measure of behavioural change (i.e. the number of times that the first-aider had helped another person after completing the course) is biased toward the null hypothesis because the answer is contingent on the number of opportunities in which help could be given. Therefore, in this behavioural measure, participants who had not encountered any situation in which help could be offered, are assumed to have undergone no behavioural change. For this reason it is likely that the mean effect size estimated by this meta-analysis (Glass's $\Delta = 0.25$) is an underestimation of the true effect of MHFA on helping behaviours. Moderator analyses suggest homogeneity among studies and that these results are independent of study quality and design.

In interpreting the utility of the MHFA programme based on these results, the reality in which it is to be implemented should be considered. One of the greatest public health-related obstacles in suicide prevention is the widespread stigmatization of mental health problems as well as the taboo surrounding suicide and the lack of knowledge regarding the identification of mental health problems, of suicidal communication, suicide risk and protective factors and treatment options (Ahmedani, 2011; Baumann, 2007; Hatzenbuehler, 2013; Henderson et al., 2013; Kelly et al., 2007; Rickwood & Thomas, 2012; Wasserman et al., 2012; Wasserman & Wasserman, 2009). For example, individuals with mental health problems are often perceived as incompetent and dangerous, and the general public often exhibit an unwillingness to socialize with them (Hinshaw & Cicchetti, 2000). Individuals with mental health problems also face extensive discrimination and marginalization in all aspects of their lives, such as reduced access to healthcare services (Corrigan, 2004) and employment exclusion (Stuart, 2006). This can lead to unemployment, poverty and homelessness. These prejudices can carry significant adverse effects on those who are afflicted (McDaid, 2008) by reducing their well-being, self-esteem and quality of life. Prejudice and discrimination against individuals with mental health problems also has adverse effects on intimate relationships (Hinshaw, 2005) and for the families and friends of the afflicted (Corrigan & Miller, 2004).

These problems are interdependent and may have several consequences: afflicted individuals may neglect to seek help until the affliction becomes unbearable (and more difficult to treat). They may be more likely to conceal their problems from relatives, friends and co-workers, resulting in reduced peer-support. Also, afflicted individuals may be less likely to enter the healthcare system. Due to the lack of knowledge about mental health problems, parents, other relatives and peers could misinterpret or completely fail to notice symptoms of mental ill-health, and in this way further reduce the afflicted person's treatment opportunities and perhaps even aggravate the condition.

The results of this meta-analysis suggest that MHFA ultimately increases mental health literacy of the general population. As such, it induces a series of cascading effects, including improvement in self-recognition, increased insight into one's own and others' emotional well-being, and enhanced mental health-related vocabulary, thus also counteracting stigma. All these effects are expected to lead to increased coping skills and improved confidence to render informed peer support.

Importantly, results indicate not only changes in knowledge and attitudes, but also changes in the behaviour of those who attend the training. This is of major importance because it shows a pragmatic change in trainees who become more active in supporting those with mental health problems and suicidality.

Considering the estimated effects of the MHFA programme on knowledge, attitudes and behaviour, this intervention programme seems to be a promising public health tool for tackling stigma and taboo surrounding people with mental disorders and suicidality. An important question that remains unanswered, and perhaps one that is a valid focus of future studies, is how MHFA actually improves the mental health of the general public.

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