

**REVIEW ARTICLE**

Child mental health literacy training programmes for professionals in contact with children: A systematic review

Jennifer O'Connell¹ | Helen Pote¹ | Roz Shafran² ¹Department of Psychology, Royal Holloway, University of London, Egham, UK²UCL Great Ormond Street Institute of Child Health, London, UK**Correspondence**

Prof. Roz Shafran, UCL Great Ormond Street Institute of Child Health, 30 Guilford Street, London, WC1N 1EH.

Email: r.shafran@ucl.ac.uk

Abstract**Aims:** There has been a surge in child mental health literacy training programmes for non-mental health professionals. No previous review has examined the effectiveness of child mental literacy training on all professionals in contact with children.**Methods:** Studies were identified through a systematic literature search of the Cochrane, EMBASE, Medline, and PsycINFO databases in February 2019. The review included studies that delivered training to professionals who have regular contact with young people aged 0 to 19 in the context of their role and at least one component of mental health literacy; (a) knowledge, (b) attitudes, (c) confidence in helping, (d) intention to help and (e) actual helping behaviour. The quality of papers was reviewed using the Cochrane revised Risk of Bias Tool for randomized controlled trials (RCTs) and the Integrated Quality Criteria for the Review of Multiple Study Designs for non RCTs.**Results:** Twenty-one studies met eligibility criteria (n = 3243). There was some evidence that global and specific child mental health literacy training improved professionals' knowledge and stigma-related attitudes towards mental health. Few studies investigated the impact of training on actual helping behaviour.**Conclusion:** There may be value in providing child mental health literacy training to professionals in contact with children, however there is a need for studies to evaluate the long-term impact of such training, particularly on subsequent access to appropriate support. Findings raise concerns about the quality of the studies reported in the systematic review and recommendations are made for future studies.**KEYWORDS**

adolescent, children, mental health literacy, professionals, systematic review, training

1 | INTRODUCTION

Mental health conditions commonly have their first onset in childhood and adolescence, with one in eight (12.8%) five to 19-year olds having a mental health diagnosis in 2017 (Sadler et al., 2018). Despite the academic, health, financial, and social impact of poor mental health

(Durcan, 2016; Goodman, Joyce, & Smith, 2011; Knapp, McDaid, & Parsonage, 2011; Murphy & Fonagy, 2012), we know that young people do not self-refer or speak to mental health professionals about their concerns. One in four 13 to 16-year olds reported they would seek help from an adult if a friend disclosed symptoms of poor mental health whereas 50% would try support their friend alone (Dunham, 2004). A

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separate survey found that parents did not always see the value in contacting specialist mental health services (Jorm, Wright, & Morgan, 2007), preferring informal or more general sources of help (Jorm & Wright, 2007). Consequently, there is a need for professionals who have regular contact with children to be able to recognize mental health issues and know how to facilitate access to further care.

Provision of mental health treatment can be inconsistent, with support often limited to young people whose needs reach a certain severity threshold and even then, people can be on long waiting lists before accessing treatment (Moore & Gammie, 2018). Due to the current treatment gap and the need for referral efficiency, there have been a surge of 'mental health literacy' training programmes aimed at increasing knowledge and skills of professionals in contact with children in order to facilitate early mental health recognition, prevention, and intervention (Kutcher, Wei, & Coniglio, 2016). 'Mental health literacy' is defined as 'knowledge and beliefs about mental disorders which aid their recognition, management or prevention' (Jorm et al., 1997, p. 182) with its measurement commonly divided into constructs of knowledge (of mental health problems and positive mental health), stigmatized attitudes, confidence in helping/intention to help, and actual helping behaviour (Wei, McGrath, Hayden, & Kutcher, 2015).

Previous systematic reviews on mental health literacy training have focused on specific professional groups such as school teachers (Anderson et al., 2018; Yamaguchi et al., 2019), police and public sector employees (Booth et al., 2017), health care workers (Liu et al., 2016), and sports coaches and athletes (Breslin, Shannon, Haughey, Donnelly, & Leavey, 2017). Two have evaluated a specific training programme called Mental Health First Aid (MHFA; Morgan, Ross, & Reavley, 2018; Hadlaczy, Hökby, Mkrtchian, Carli, & Wasserman, 2014) and others have focused on improving young people's mental health literacy instead of professionals (eg, Wei, Hayden, Kutcher, Zygmunt, & McGrath, 2013) or raising awareness of specific mental health conditions (eg, Dickens, Hallett, & Lamont, 2016). Overall, these reviews found that mental health literacy training was effective in improving knowledge and attitudes however there was little or insufficient evidence that training improved professionals' helping behaviour.

There have been no systematic reviews of the effectiveness of youth mental health literacy training programmes across all professionals working with children. Understanding the effectiveness across all professionals is important given that there are typically many different professionals involved in young people's care, including school teachers, public sector workers and healthcare workers. Such a multidisciplinary approach is in the best interests of the young person, but organizations are likely to want to provide a single mental health literacy programme for all those involved. The current review aims to answer (a) what extent child mental health literacy training programmes improve professionals' knowledge and/or stigma-related attitudes towards mental health and (b) to what extent training programmes facilitate young people accessing the mental health support that they might need.

2 | METHOD

The systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati et al., 2009; Moher, Liberati, Tetzlaff, & Altman, 2009). The strategy was devised and agreed in consultation with a specialist librarian. Key search terms included "mental health", "training", "literacy", and "child" (a full search strategy can be provided upon request). One reviewer (JOC) searched the Cochrane, EMBASE, Medline, and PsycINFO databases up until February 2019. Reference lists of the included papers and relevant systematic reviews were reviewed to identify relevant articles.

2.1 | Inclusion and exclusion criteria

The review included studies that delivered training to professionals who have regular contact with young people (0-19) in the context of their role. The age range was chosen on the basis of service provision since some services accept people who are 18 at assessment and in full time education, and therefore, professionals may have contact with them when they are 19. Only articles that explicitly stated that the content included child or adolescent material were included and those that quantitatively measured at least one component of mental health literacy (a) knowledge of mental health conditions; (b) attitudes towards mental illnesses; (c) confidence in helping young people with mental health problems, (d) intention to help, and (e) actual helping behaviour. There were no limitations on study design.

Studies that trained non-professionals (eg, parents, young people) in mental health literacy or solely used adult training material were excluded. As the concept of mental health literacy was established in 1997, only published studies after 1997 were included in the review; although a search through the titles of removed papers did not uncover relevant discarded studies. Articles that did not conduct baseline questionnaires prior to training were also excluded.

2.2 | Study selection

Duplicates were removed, titles and abstracts were screened for relevance, and full texts were requested for the remaining papers by one reviewer (JOC). Studies identified via relevant reference lists or systematic reviews were included. An independent reviewer viewed full texts of the remaining studies against the eligibility criteria and disagreements were resolved via discussion.

2.3 | Quality assessment

The overall quality of the randomized controlled trials (RCT) studies was established using the Cochrane revised Risk of Bias Tool (RoB 2; Higgins et al., 2016) and the Integrated Quality Criteria for the Review of Multiple Study Designs (ICROMS; Zingg et al., 2016) tool was used for non-RCTs. The RoB 2 assesses the risk of bias across three levels

(low, some, high concerns) on five/six domains: the randomisation process, identification and recruitment of participants (cluster trials only), deviations from the intended interventions, missing outcome data, measurement of the outcome, and reported result. An overall risk quality score can also be calculated.

The ICROMS tool allows for different methodologies to be assessed under 14 to 15 items across seven domains: clear aims and justification, managing bias in sampling or between groups, outcome measurements and blinding, follow-up, analytical rigour, reporting/ethical considerations, and managing bias in other study aspects. Items are rated as “yes criteria”, “no criteria”, or “unclear criteria”. There is no overall quality judgement. Inter-rater reliability was assessed via an independent reviewer and discrepancies were resolved through discussion.

3 | RESULTS

3.1 | Study screening

Initially, 678 studies were identified via the database search and five more were sourced from reference lists (see Figure 1). After removing

126 duplicates, 557 unique citations were screened for inclusion. Titles and abstracts were assessed for relevance resulting in 93 potential citations. After applying the inclusion criteria to full texts, a further 72 papers were excluded resulting in 21 relevant studies.

Data from the 21 studies were extracted and synthesized into participant characteristics (Table 1), study characteristics (Table 2), and study outcomes (Table 3). A meta-analysis was not conducted because of the limited studies that met criteria for low risk of bias and the high methodological heterogeneity between studies. A narrative synthesis of the data is, therefore, presented.

3.2 | Participant characteristics

The total number of participants of the included studies was 3243, ranging from 16 to 1024 (mean 154.4). Training programmes were primarily aimed at primary (n = 3) or secondary school teachers (n = 8). Others targeted student teachers (n = 1), youth leaders (n = 1), student social workers (n = 1) and mental health agency staff (n = 1). The six remaining studies had a mix of teachers and different professionals (eg, social workers, psychologists, administration), with one study including 24 different professional groups. Participant age was

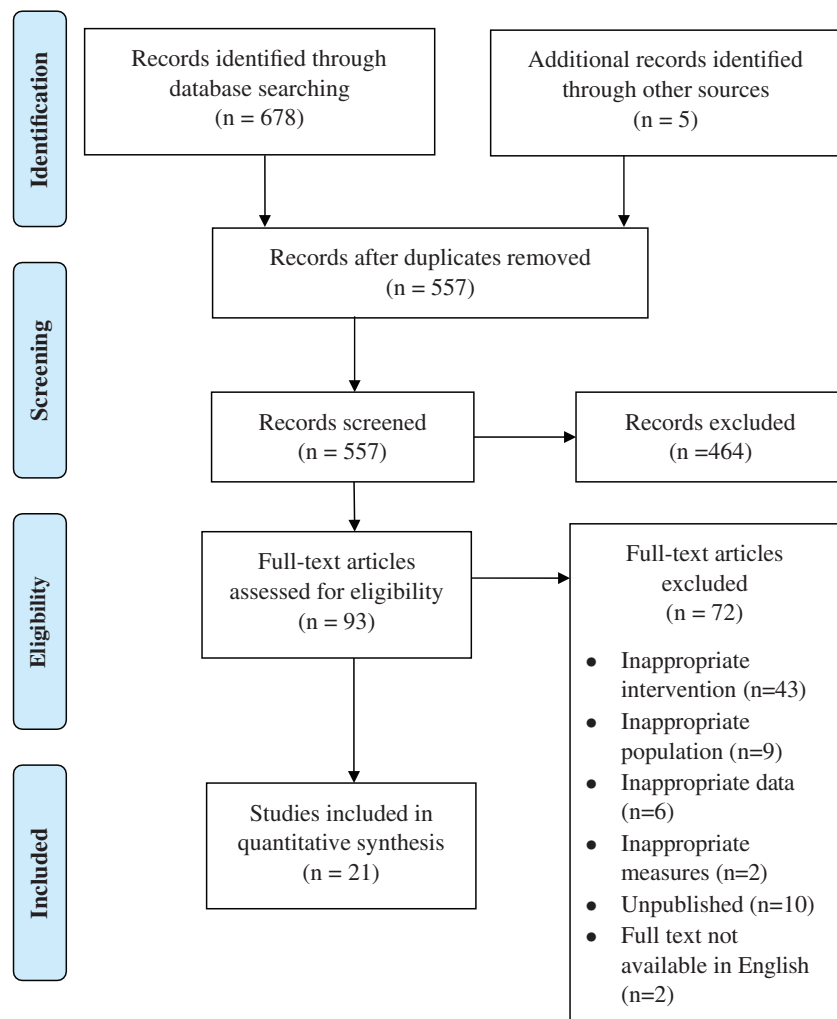


FIGURE 1 PRISMA flow diagram

TABLE 1 Participant characteristics

Author	Population	Total N	Age	% Female	Ethnicity	Location
Bapat, Jorm, and Lawrence (2009)	Junior sporting club coaches and leaders	N = 40	20-59	60%	NR	Australia
Barbaresi and Olsen (1998)	Elementary teachers (kindergarten through grade 6). 29 regular classroom teachers, 15 specialist teachers	N = 44	Mean age 42 years	75%	NR	USA
Carr, Wei, Kutcher, and Heffernan (2018)	Preservice teachers in middle/ secondary teaching	N = 60	NR	68.33%, 1% not specified	NR	Canada
Cheng, deRuiter, Howlett, Hanson, and Dewa (2013)	Non-medical mental health workers: case managers, counsellors, social workers, therapists, psychometrist and managers	N = 19	NR	NR	NR	Canada
Eustache et al. (2017)	Secondary teachers	N = 22	40-47	18%	NR	Haiti
Hussein and Vostanis (2013)	Primary teachers Grade 1-5	N = 114	35% 21-25, 5% >40, 60% NR	100%	NR	Pakistan
Jorm, Kitchener, Sawyer, Scales, and Cvetkovski (2010)	High school teachers Years 8-10	N = 327, 14 schools Intervention: 221 Control: 106	NR	65.10%	NR	Australia
Kidger et al. (2016)	Secondary teachers	N = 1024 Intervention: 472 Control: 552	NR	NR	NR	UK
Kutcher, Wei, McLuckie, and Bullock (2013)	High school teachers Grade 9	N = 89	NR	76%	NR	Canada
Kutcher et al. (2015)	Elementary and high school teachers and youth club leaders. No details of breakdown	N = 218	20-30	44% (1% not specified)	NR	Malawi
Kutcher et al. (2016)	Secondary teachers who had previously undergone training	N = 61	NR	47.50%	NR	Tanzania
Martínez et al. (2015)	School psychologists (44.7%) Teachers (25%) School counsellors (17.8%) Social workers (5.3%) Other (7.2%)	N = 152	23-66 Mean age 35.9 (10.3)	74.3%	NR	Chile
McVey, Gusella, Tweed, and Ferrari (2008)	Elementary teachers (n = 78) & public health practitioners (n = 89)	N = 167	NR	88.02%	Caucasian (84.4%), East Asian (1.8%), South Asian (1.2%), Native Canadian (.6%) and other (5.4%)	Canada
Moor et al. (2000)	Secondary teachers	N = 16	NR	NR	NR	UK
Moor et al. (2007)	Secondary teachers	N = 151, 8 schools	NR	66.89%	NR	UK
Pereira, Wen, Miguel, and Polaczyk (2015)	Primary teachers	N = 115, 9 schools	30-54	96.52%	Caucasian (88.70%), Other (11.3%)	Brazil

TABLE 1 (Continued)

Author	Population	Total N	Age	% Female	Ethnicity	Location
Powers, Wegmann, Blackman, and Swick (2014)	24 employment positions: 55% Classroom teachers (89% of which were elementary school teachers) 46% other (eg, counsellor, social worker, speech therapist)	N = 157	NR	86%	White (48%), African American (44%) and other (3%)	USA
Rose, Leitch, Collins, Frey, and Osteen (2017)	Social work students on placement with youths aged 12-18	N = 73 Intervention: 39 Control: 34	21-33	94.5	Caucasian (57.5%), Black/African American (26%), Mixed/Other race (16.5%)	USA
Vieira, Gadelha, Moriyama, Bressan, and Bordin (2014)	Middle & high school teachers, no breakdown.	N = 32	20 - >50, 82.8% > 39 years	69.8%	NR	Brazil
Wei and Kutcher (2014)	Secondary Teachers (70%), Guidance/school Counsellors (17%), Principals / Administrators (6%), Social workers (1%), Other educators (6%)	N = 134	NR	70.83% (1% not specified)	NR	Canada
Wei, Kutcher, Hines, and Mackay (2014)	Highschool Teachers of Grade 9	N = 228	NR	75%	NR	Canada

Abbreviation: NR, not reported.

reported in seven studies (range 20-54 years). Of the 19 that that reported gender, female participants ranged from 18 to 100% (mean 70.9%). Ethnicity was reported in four studies with Caucasian participants being the majority. Six studies took place in Canada, three in the United States and the United Kingdom, two in Australia and Brazil, and one in Haiti, Malawi, Tanzania, Pakistan and Chile, respectively.

3.3 | Study characteristics

3.3.1 | Methodological quality and analyses

There were five RCTs, one non-randomized controlled trial (NRCT), and 15 uncontrolled trials (UT). The methodological quality of each study was assessed and reported individually in Figures 2 and 3 for RCTs and other designs, respectively.

Of the six controlled trials, two were waitlist controls and one had an additional active comparison group. Sixteen studies collected only pre-post data, ranging from immediately after to 12-months post-training. The remaining five also collected follow-up data, ranging from 6 weeks to 9 months post-training, with three of five studies having a follow-up period of 3 months or more.

Sixty-two percent (n = 13) achieved a good response rate post-training (ie, >80%). Three explicitly reported being underpowered to perform the analyses, however the majority made no reference to power calculations. Eight explicitly reported that their study needed to be replicated with a larger sample size; five of which were pilot studies.

3.3.2 | Training delivery

The majority of studies delivered the training content face-to-face (n = 18). Two were delivered online and one study delivered the training simultaneously face-to-face and via video conferencing, finding no difference between either delivery method. Six of the face-to-face programmes were approximately 1 day (7-8 hours), six were 2-4 hours, and seven were 2-3 days. Of the two online studies, participants had access to the training content for 60 days in one and were required to complete the training in 1 three-hour block for three consecutive weeks in the other.

3.3.3 | Training content

There was some overlap between the content covered across the 21 studies. Fifteen studies looked at a variety of common youth mental health presentations (eg, depression, anxiety, schizophrenia, ADHD and substance abuse). Four of these used an established youth-MHFA programme, five used an established school curriculum-based training package called the Mental Health and High School Curriculum Guide (MHSCG; Kutcher, 2009), and the other six did not use an established protocol. The remaining six studies developed their own

TABLE 2 Study characteristics

Author	Design	Intervention comparison	Follow-up	Training course	Delivery details	Training duration
Bapat et al. (2009)	UT	None	Immediately post training	Read the Play (YMHA)	F2F	8 hours (3-days across 3-weeks)
Barbatesi and Olsen (1998)	UT	None	1-month post training	CHADD	F2F	2.5 hours
Carr et al. (2018)	UT	None	Immediately post-training & 3 MFU	MHSCG	F2F	1 day
Cheng et al. (2013)	UT	None	3 & 9 MFU and 6-month focus group	EPI	F2F / Videoconferencing	2 days
Eustache et al. (2017)	UT	None	Immediately post-training & 6-9 WFU	TAPS	F2F	2.5 days
Hussein and Vostanis (2013)	UT	None	Immediately post-training	School-based training	F2F	12 hours (x6 2-hours sessions)
Jorm et al. (2010)	RCT	Waitlist control	Immediately post-training & 6-MFU	YMHA	F2F	2 days, 7-hours x2
Kidger et al. (2016)	RCT	Control	12-months post-training	MHA + peer support and YMHA	F2F	2 days (14 hours)
Kutcher et al. (2013)	UT	None	Immediately post-training	MHSCG	F2F (+access to online modules)	7 hours
Kutcher et al. (2015)	UT	None	Immediately post-training	AGMv (MHSCG)	F2F	3 days
Kutcher, Wei, Gilberts, et al. (2016)	UT	None	Immediately post-training	AG Refreshers training (MHSCG)	F2F	2 days
Martínez et al. (2015)	UT	None	Immediately Post-training	Adolescent depression: What can schools do?	F2F	4 hours
McVey et al. (2008)	RCT	Control group	Immediately post-training	The Student Body: Promoting Health at Any Size	Online	60 days access
Moor et al. (2000)	UT	None	Immediately post-training	Educational package on adolescent depression	F2F	2 hours
Moor et al. (2007)	RCT	Control group	Immediately post-training	Educational package on adolescent depression	F2F	2 hours
Pereira et al. (2015)	RCT	(i) Waitlist control (ii) Web-based interactive education (iii) Text- and video-based education	Immediately post-training	WBIE and TVBE	Online	9 hours (one 3-hour block every 3 weeks)
Powers et al. (2014)	UT	None	Immediately post-training	SBMH	F2F	2 hours
Rose et al. (2017)	NRCT	Control group	Immediately post-training & 5-MFU	YMHA	F2F	8 hours (or 4 hours over 2 days)
Vieira et al. (2014)	UT	None	Immediately post-training	Psychoeducation	F2F	4 hours (2 hours over 2 weeks)
Wei and Kutcher (2014)	UT	None	Immediately post-training	'Go-to' Educator Training	F2F	1 day
Wei et al. (2014)	UT	None	Immediately post-training	MHSCG	F2F (+ access to online modules)	7 hours

Abbreviations: AG, The African Guide; AGMv, The African Guide Malawi Version; CHADD, Child and Adults with Attention-Deficit Disorder Educators Inservice; EPI, early psychosis intervention training; F2F, face to face training; MFU, month follow-up; MHSCG, Mental Health and High School Curriculum Guide; MH, mental health; MHA, mental health first aid; SBMH, school-based mental health; TAPS, teacher-accompanateur; TVBE, text and video-based education; WBIE, web-based interactive education; WFU, week follow-up; YMHA, youth mental health first aid.

TABLE 3 Study outcomes

Author	Knowledge	Attitudes towards MH	Confidence to help	Intention to help	Actual helping behaviour
Bapat et al. (2009)	Post: $d = \dagger$ Mean True/False scores improved from 12 to 14 *** Depression recognition 72.5% to 92.5%. Psychosis recognition 7.5% to 62.5%	Depression: Range $d = .52^{**} - .87^{***}$ Psychosis: Range $d = .61^{**} - .69^{**}$	Depression $d = 1.15^{**}$ Psychosis $d = 1.02^{**}$	-	-
Barbarese and Olsen (1998)	Post: $d = .80^{**}$	-	-	-	-
Carr et al. (2018)	Post: $d = 3.1^{***}$ 3-MFU: $d = 1.74^{***}$	Post: $d = 1.18^{***}$ 3-MFU: $d = .68^{**}$	-	3-MFU: $d = .46^{***}$	-
Cheng et al. (2013)	3-MFU = ns ($d = .51, p = .1$) 9-MFU = ns ($d = 0.0, P = 1.0$)	-	-	-	Increase in proportion of referrals from 2 to 8 and accepted referrals from 0 to 4.
Eustache et al. (2017)	Post $d = 1.32^{**}$ 6-9-week FU $d = 1.28^{**}$	Post $d = .60^{*}$ 6-9 week FU $d = 1.00^{**}$	-	-	-
Hussein and Vostanis (2013)	Post $d = .43^{**}$	-	-	-	-
Jorm et al. (2010)	Intervention vs Comparison: Post $d = .57^{***}$ Intervention vs Comparison group: 6-MFU $d = .52^{***}$	Intervention vs Comparison: Post $d = \dagger$ Intervention vs Comparison: 6-MFU $d = \dagger$	Intervention vs Comparison: Post $d = 1.09^{**}$ Intervention vs Comparison: 6-MFU $d = 1.35^{**}$	Intervention vs Comparison: Post $d = 1.15^{*}$ Intervention vs Comparison: 6-MFU $d = 1.07^{*}$	Intervention vs Comparison: Post = $ns \dagger$ Intervention vs Comparison: 6-MFU = $ns \dagger$
Kidger et al. (2016)	Intervention vs Comparison: 12 months post $d = 1.15^{*}$	Intervention vs Comparison: 12 months post for anxiety $d = .73^{*}$ and depression $d = .77^{*}$	Intervention vs Comparison: 12 months post $d = .8,$ ns ($P = .07$)	-	Intervention vs Comparison: Less helping over the past academic year $d = .47^{*}$
Kutcher et al. (2013)	Post $d = 1.53^{***}$	Post $d = .85^{***}$	-	-	-
Kutcher et al. (2015)	Post $d = 1.16^{***}$	Post $d = .79^{***}$	-	-	-
Kutcher, Wei, Gilberts, et al. (2016)	Post $d = 1.14^{***}$	Post $d = .61^{***}$	Post $d = .19, ns$ ($P > .05$)	-	84% identified students with MH needs and 79% advised that the student seek professional help (totaling >200 students).
Martínez et al. (2015)	Post $d = 2.04^{***}$	-	-	-	-
McVey et al. (2008)	Intervention vs Comparison: Improvement in 3 of 11 knowledge-based items Post $d = \dagger, p < **$ to $> .95$	-	-	-	-
Moor et al. (2000)	Post $d = \dagger, p < * to ns$ Improvement in 4/10 items	Post $d = \dagger, p < * to ns$ Improvement in 4/10 items	-	-	-

(Continues)

TABLE 3 (Continued)

Author	Knowledge	Attitudes towards MH	Confidence to help	Intention to help	Actual helping behaviour
Moor et al. (2007)	<p>Post $d = †$, ns ($p > .05$) Recognized 58% (7 of 12) depressed pupils pre-training and 75% post-training (9 of 12).</p> <p>Intervention vs Comparison: Post $d = †$, ns ($P = .58$)</p> <p>Depression recognized: Intervention group: 52% pre; 45% post</p> <p>Control group: 41% pre; 43% post</p>	<p>Intervention: Post $d = †$, $p < ***$ to ns. Improvement in 6/10 items</p> <p>Intervention vs Comparison: Post $d = †$</p>	-	-	-
Pereira et al. (2015)	<p>Intervention vs Comparison: Post $d = †$, ns ($P = .23$) No difference in overall score between groups using ITT</p>	<p>Intervention vs Comparison: Stigmatized concepts in mental health: WBIE fewer stigmatized opinions than TVBE ($\beta = -0.92^{***}$), WL fewer stigmatized opinions than TVBE ($\beta = .98^*$) no difference between WBIE and WL ($\beta = .08$, $P = .87$).</p> <p>Non-stigmatized concepts in mental health: WBIE fewer non-stigmatized opinions than WL ($\beta = 1.18^*$), no difference between WBIE and TVBE ($\beta = .41$, $P = .73$) or TVBE and WL ($\beta = .77$, $P = .19$).</p> <p>Attitudes in mental health: No difference between WBIE and TVBE ($\beta = .18$, $P = .66$), WBIE and WL ($\beta = .47$, $P = .37$), or TVBE and WL ($\beta = .3$, $P = .57$).</p>	-	-	-
Powers et al. (2014)	Post $d = .81^{**}$	-	-	-	-
Rose et al. (2017)	<p>Intervention only: Post $d = 1.07^*$</p> <p>5-MFU $d = .48^{**}$</p> <p>Intervention vs Comparison: Post $d = †$</p> <p>5-MFU $d = †$ ($\eta^2_p = .28$)***</p>	<p>Intervention only: Post $d = §$</p> <p>5-MFU $d = §$</p> <p>Intervention vs Comparison: Post $d = §$</p> <p>5-MFU $d = §$</p>	<p>Intervention only: Post $d = 1.2^{**}$</p> <p>5-MFU $d = .98^{**}$</p> <p>Intervention vs Comparison: Post $d = †$</p> <p>5-MFU $d = †$ ($\eta^2_p = .20$)**</p>	-	-
Vieira et al. (2014)	<p>Post = ns</p> <p>Identification pre-post training: Conduct disorder 96.7% to 93.3%</p> <p>Hyperactivity 76.7% to 73.3%</p> <p>High-risk for psychosis 76.7% to 80%</p> <p>Mania 83.3% to 83.3%</p> <p>Depression 80% to 83.3%</p>	-	-	-	-

TABLE 3 (Continued)

Author	Knowledge	Attitudes towards MH	Confidence to help	Intention to help	Actual helping behaviour
Wei and Kutcher (2014)	Normal behaviour 67% to 80% Post $d = 2.3^{***}$	Post $d = .36^{***}$	-	-	-
Wei et al. (2014)	Post $d = 1.85^{***}$	Post $d = .51^*$	-	-	-

Note: * = $P < .05$, ** = $P < .005$, *** = $P < .001$; d = Cohen's d . † = not able to calculate from available data. ‡ = authors did not conduct this analysis. § = authors did not report data due to unacceptable reliability. Abbreviations: ITT, intention to treat analysis; MFU, month follow-up; MH, mental health; ns, non-significant change; TVBE, text and video-based education; WBIE, web-based interactive education; WL, waiting list control group.

programme based on disorder specific content; three on depression and one on ADHD, psychosis, and eating disorders, respectively.

3.4 | Study outcomes

Effect sizes were calculated for studies by dividing the mean difference of the paired groups by the pooled SD. For uncontrolled trials, the effect size is the mean difference within groups pre-post. For controlled trials, the effect size is the between-group difference at post although pre-post differences for the intervention group were also computed where available. All effect sizes were reported when data were available. Cohen's (1988) suggestions that 0.2 is a small effect, 0.5 is a moderate effect, and 0.8 is a large effect were used.

3.4.1 | Mental health knowledge

All 21 studies measured professionals' knowledge of mental health. Each study used a different self-report questionnaire to measure change, ranging from 12 to 48 items. Seventeen assessed the specific training content and the remainder looked at change in disorder specific knowledge. Four measures had been validated. Four studies used vignettes to assess recognition of mental health conditions (eg, depression) pre- and post-training. Confidence in implementing the knowledge was measured in five studies and intention to help was measured in two.

Fifteen studies reported an increase in mental health knowledge pre-and post-training as well as sustained effects at follow-up ($n = 4$) ranging from 6 weeks to 6 months, suggesting that training had been effective at raising mental health knowledge. From studies where an effect size was reported or calculated from available data, effect sizes ranged from 0.43 to 3.1 post-training ($n = 14$) and 0.48 to 1.74 at follow-up ($n = 4$). The remaining five studies showed no overall change in mental health knowledge following training or at a nine-month follow-up ($n = 1$) and one study showed improvements across some items (McVey et al., 2008).

3.4.2 | Attitude towards mental health

Fourteen studies measured professionals' general attitudes towards mental health. Items, ranging from 3 to 40, varied across studies from attitudes towards people with mental health concerns, attitudes towards treatment, stigmatized perceptions of specific mental health conditions to mental health conditions more broadly. Three used validated measures, although one had poor reliability. Nine studies reported improved overall attitudes towards mental health, four had mixed results across different items, and one did not report results due to inappropriate reliability. One of the studies (Pereira et al., 2015) reported that their waitlist control group had a lower rating compared to one of the training groups post-training. One study did not report data due to unacceptable reliability (Rose et al., 2017). Effect sizes ranged from 0.36 to 1.18 at post-training ($n = 9$) and 0.68 to 1.0 at follow-up ($n = 2$).

	Randomization process	Identification and recruitment	Deviations from intervention	Missing outcome data	Measurement of the outcome	Selective reporting	Overall risk of bias
Jorm et al., 2010	U	L	L	L	L	U	U
Kidger et al., 2016	U	L	L	H	U	H	H
McVey et al., 2008	L	U	U	H	L	L	H
Moor et al., 2007	U	Na	L	L	L	L	U
Pereira et al., 2014	L	L	L	L	U	L	U

L	Low risk of bias
U	Unclear risk of bias
H	High risk of bias
Na	Not applicable

FIGURE 2 Quality assessment of randomized controlled trials (RCTs) using the Cochrane revised Risk of Bias Tool

3.5 | Confidence and intentions

Three of five studies showed an increase in confidence to support young people with a mental health concern, with effect sizes ranging from $d = 1.09$ to 1.15 post-training ($n = 3$) and $d = 0.98$ to 1.35 at follow-up ($n = 2$). Following training, both studies measuring intentions to help a young person showed improvements. One measured intentions pre-training ($d = 1.15$) and maintained this post training ($d = 1.07$), and one only measured at 3 months post-training ($d = .46$).

3.5.1 | Subsequent support young people received

Four of the 21 studies investigated the subsequent impact of the training on helping behaviour and the results were mixed. Two studies looked at referral data to mental health services following training. In one, teachers reported recognizing mental health concerns in over 200 students and advising them to seek local mental health support (Kutcher, Wei, Gilberds, et al., 2016); however, it was not recorded whether young people proceeded to access support. In the other, there was an increase in the proportion of referrals made (from two to eight) and accepted (from zero to four) to an early intervention service following the training. It was noted, however, that these referrals were not made by participants who attended the training (Cheng et al., 2013).

Two RCTs used self-reported scales to assess whether the training improved teacher's actual helping behaviour. One found that there was no difference in help received following the YMHA

training (Jorm et al., 2010) and the other found that teachers reported providing less help to students with mental health support within the academic year following training (Kidger et al., 2016). The authors do not discuss the implication of this finding, and although it is contradictory to other studies, one may need to consider the possible negative effects of mental health literacy training. Students in this case did show a slight increase in wellbeing and lower difficulties score over the course of 12-months; however, it is unclear if there was a difference between conditions and whether this small shift is attributable to the intervention, particularly as attrition was greater than 50%.

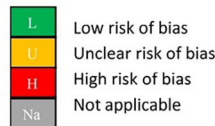
4 | DISCUSSION

This review aimed to determine the effectiveness of child mental health literacy training for improving the knowledge and attitudes of professionals working with young people, and whether young people received or were signposted for support following the training. Twenty-one studies were identified, five of which were RCT evaluations. All studies had at least one category of bias that was assessed as high risk, with almost all studies omitting adequate ethical and demographic information. There was also no measurement of fidelity across similar training paradigms, making it difficult to know if findings are reliable. A large proportion of papers used non-validated measures designed to assess specific training content or validated disorder-specific measures that were not specific enough to capture knowledge change following training. Overall, there was a large degree of heterogeneity in the training programmes and assessment methods. Despite these methodological limitations, the majority (71.4%, $n = 15$) of training programmes appeared to be effective at improving mental health knowledge with a moderate-large effect size; encouragingly, almost two-thirds had a small-to-large impact on attitudes. It is not possible to make a judgement on whether child mental health literacy training was successful in improving participant's confidence or intentions to help young people given the limited number of studies that have measured both constructs. Inconsistent findings also made it difficult to determine if there was a link between confidence in supporting a young person and actual help provided. Training courses may need to focus on increasing professionals' confidence in implementing their newfound knowledge.

The variability amongst the studies in terms of both quality and specific outcomes was striking. One study had attrition rates reaching as high as 56% (Pereira et al., 2015) and two studies had very high baseline knowledge rates before the intervention, thus precluding significant changes (Cheng et al., 2013; Vieira et al., 2014). In one study there was a worsening of stigmatized attitudes in the control group post-training (Jorm et al., 2010) but in another there were improvements in controls' attitudes compared to the intervention group (Pereira et al., 2015). The majority of the studies did not measure helping behaviour despite its pivotal importance. Of the four that did, none produced convincing evidence that training was successful in gaining young people access to appropriate support, which calls into

FIGURE 3 Quality assessment of non-randomized controlled trial (RCT) studies using the Integrated Quality Criteria for the Review of Multiple Study Designs

	Clear statement of aims	Baseline measure	Explanation for no control	Control did not get the intervention	Selection rational	Rationale for participation allocation	Outcome assessment impact	Reliability of measures	Incomplete outcome data	Intervention modifications	Mitigation of no control	Data analysis	Selective reporting	Limitations addressed	Justified conclusions	Ethical issues	Other bias
Bapat et al. 2009	L	L	H	Na	L	Na	L	U	L	L	H	L	L	U	L	H	H
Barbaresi & Olsen 1998	H	L	L	Na	L	Na	U	U	U	U	H	H	H	L	U	H	H
Carr et al. 2018	L	L	L	Na	L	Na	L	L	L	L	H	L	U	U	U	U	H
Cheng et al. 2013	L	L	H	Na	L	Na	L	L	L	L	H	L	L	U	U	U	H
Eustache et al. 2017	L	L	H	Na	L	Na	L	U	L	L	H	L	U	L	L	L	H
Hussein & Vostenis 2013	L	L	H	Na	H	Na	L	U	L	L	H	L	L	U	H	U	N
Kutcher et al. 2013	L	L	U	Na	U	Na	L	U	L	L	U	L	L	L	U	H	H
Kutcher et al. 2015	L	L	H	Na	L	Na	L	L	H	L	U	L	L	L	L	U	H
Kutcher et al. 2016	L	L	H	Na	L	Na	L	L	L	L	U	L	L	L	L	U	H
Martinez et al. 2015	L	L	H	Na	H	Na	L	U	L	L	H	L	L	H	H	L	H
Moor et al. 2000	U	L	H	Na	L	Na	L	L	L	L	H	L	L	U	H	H	H
Powers et al. 2014	L	L	H	Na	L	Na	L	U	L	L	H	L	U	U	H	H	H
Rose et al. 2017	L	L	Na	L	Na	U	L	L	L	L	Na	L	L	L	L	L	L
Vieira et al. 2014	L	L	H	Na	H	Na	L	U	L	L	H	U	U	H	H	L	H
Wei & Kutcher 2014	U	L	H	Na	L	Na	L	U	L	L	H	L	L	U	H	U	H
Wei et al. 2014	H	L	H	Na	U	Na	L	U	L	L	H	U	U	H	H	H	H



question whether the improved knowledge and attitudes towards mental health as a result of the training can translate into improved action. Only one study looked at accepted referral data to a mental health team, and although there were 50% more successful referrals following the training, these figures were very low and the referrals were not made by professionals who attended the training (Cheng et al., 2013). It was posited by the authors that this could be understood in terms of knowledge being shared with colleagues who did not attend the training. This suggests that such training programmes may have an educational multiplier effect inadvertently reaching a wider audience than the limited number of staff who can attend face-to-face training programmes and that there may be some intrinsic

value in building in the dissemination of the key components of the programme to colleagues.

Measuring subsequent helping behaviour can be methodologically difficult to capture but is essential to truly understand the value (or otherwise) of mental health literacy training programmes. An evaluation every 3 months for up to a year could help to understand at which point additional booster sessions might be advised. Such refresher sessions could potentially tie into an individual's annual continuing professional development activities. Gaining a true picture of training impact would require a consideration of multiple sources, such as objective data on referrals made and accepted by professionals to relevant services, contact made with professional services,

self-referrals, help-seeking via support groups or the internet made by young people, the young person's self-reported account of advice or help provided, or monitoring of wellbeing outcomes on young people who have sought support following a conversation or lesson on mental health.

Of interest, the findings suggested that training for as little as 2 hours could significantly improve professionals' knowledge, however it is unclear if this was sustained. Longer trainings were observed to have greater effect sizes for knowledge and attitude changes, with the highest change being observed in a one-day face-to-face session. Overall, generic and curriculum-based training had more successful outcomes than disorder specific training, possibly because the majority were longer or conducted face-to-face where professionals had more opportunities for discussion and to ask questions. Taken together, the review indicates that a standalone (or curriculum programme for teachers) session delivered face-to-face over one or more days may be the most appropriate approach when professionals require training across a broad range of mental health conditions. However, it was also notable that the review captured data from 10 different countries and across six continents, and cultural sensitivities need to be considered. The paucity of male and non-Caucasian professionals receiving child mental health literacy training suggests that future studies should attempt to target professionals outside of the female and Caucasian demographics so that children of all genders and ethnicities have role models educating them and advocating for their mental wellbeing.

The majority of studies completed training programmes with teaching staff. Healthcare workers, club leaders and social workers were also recipients of the training. This may reflect the main professional groups that young people come into contact with, however it is stark contrast to the adult mental health literacy training programmes that have delivered training to a diverse range of professionals from the police (eg, Booth et al., 2017), government and public sector workers (eg, Kitchener & Jorm, 2004; Svensson & Hansson, 2014), nurses (eg, Bingham & O'Brien, 2018; Burns et al., 2017), medics (eg, Davies, Beever, & Glazebrook, 2018), and pharmacy students (eg, El-Den, O'reilly, Chen, & Moles, 2016).

5 | CONCLUSION

Professionals' knowledge and attitudes towards child mental health were significantly improved following training courses included in this review. Changes were observed in disorder specific and global mental health literacy training, ranging from 2 hours to 3 days. Changes in mental health knowledge were observed to be greater than changes in attitudes, however longer follow-ups are needed. Future studies also need to measure both confidence in helping behaviour and actual helping behaviour using objective measures. Currently, there is not enough evidence to suggest that these changes translate to young people accessing appropriate support as studies rarely sought to investigate this. The differences between face-to-face and digital training programmes also need to be investigated as digital

programmes may be a more time-efficient way to target a larger proportion of professionals in contact with children. Overall, higher quality research using a blind RCT design, standardized measures of the 'mental health literacy' construct, follow-up period, and a measure of actual helping behaviour is required to appropriately determine the value of such training programmes and understand whether the positive findings are generalizable.

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ORCID

Jennifer O'Connell  <https://orcid.org/0000-0001-7830-1071>

Helen Pote  <https://orcid.org/0000-0001-8551-1931>

Roz Shafran  <https://orcid.org/0000-0003-2729-4961>

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