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Supporting and Sustaining Nonspecialists to Deliver Mental Health Interventions in Low- and Middle-Income Countries: An Umbrella Review

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Abstract

This umbrella review used a systematic approach to examine the state of the evidence regarding the nonspecialist health worker (NSHW) workforce in mental health and psychosocial services in low- and middle-income countries (LMICs). Seventeen review articles were included in this analysis. Most reviews defined nonspecialists by their lack of formal mental health experience. Less than half of the reviews reported their qualifications and roles. Findings indicated that NSHWs were trained and supervised in a range of skills with variability in approaches, duration, format and topical focus. The evidence supporting NSHW-delivered interventions was mixed but mainly favourable, particularly for depression, anxiety and posttraumatic stress disorder; additionally, studies identified implementation challenges with the nonspecialist workforce. In conclusion, NSHWs are widely used in LMICs to address mental health needs and some indicators suggest the interventions they deliver are beneficial, yet little is known about their needs and requirements. Further work is needed to prioritise nonspecialists as a critical workforce in global mental health. This includes developing best practice models, new policies and investments and conducting further research.

Key implications for practice

- Though nonspecialist health workers (NSHWs) are used widely in low- and middle-income countries (LMICs) for mental health and psychosocial service delivery, there are major gaps in knowledge about the nonspecialist workforce including roles, definitions, training and supervision approaches and compensation.
- Additional investments are needed to strengthen mental health systems in LMICs, with policies that clearly identify the roles and responsibilities of NSHWs and fair compensation within the broader mental health service delivery system.
- Future research is needed that focuses on understanding the varying needs and requirements of NSHW in LMICs and developing best practice approaches that provide adequate support that can sustain nonspecialists in the long-term.

Keywords: low- and middle-income, mental health, nonspecialist, psychosocial, supervision, training

Introduction

Depression, anxiety and other common mental health disorders are a leading cause of disability worldwide (Patel et al., 2018), with approximately 30% of the global population experiencing one or more during their lifetime (Steel et al., 2014). Additionally, there are an estimated 26 million people with severe and persistent mental illnesses such as schizophrenia and other psychotic disorders globally (Wainberg et al., 2017). There are enormous gaps in mental health resources and infrastructure, particularly in low- and middle-income countries (LMICs; World Health

Organization (WHO), 2017). As a result, only a small percentage of people have access to mental health treat-

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ment, with an estimated 90% treatment gap in some low-resource settings (Tomlinson et al., 2009). In the absence of adequate care and resources, mental health conditions persist and worsen, leading to increased functional impairment and premature morbidity and mortality (Patel et al., 2018).

One well-established approach to address the mental health service shortage in LMICs is task sharing. *Task sharing* is defined as “a process of delegation whereby tasks are moved from highly specialized to less specialized health workers” (WHO, 2008, p. 7). Typically, this includes shifting tasks from specialised mental health professionals to other highly skilled but differently trained health providers. In mental health services, this approach has also been extended to include allocation of tasks to lay and peer providers such as community health workers and lay counsellors. To date, nonspecialist health workers (NSHWs) have been used to deliver a range of interventions including but not limited to individual and group psychotherapies (Singla et al., 2017), maternal mental health interventions (Rahman et al., 2013), psychosocial services (Barbui et al., 2020) and mental health promotion interventions (Barry et al., 2013).

Several systematic reviews have been conducted to synthesise the evidence on NSHW-delivered mental health and psychosocial support (MHPSS) interventions in LMICs. Existing reviews primarily focused on assessing the effectiveness of various evidence-based interventions and found these interventions are promising for alleviating common mental disorders, with less evidence for treating severe mental illnesses (Vally & Abrahams, 2016; van Ginneken et al., 2013). However, contextualizing the state of the evidence is hindered by a lack of focus on the nonspecialist workforce utilised to implement MHPSS interventions. This includes understanding which characteristics and experiences of NSHW is optimal for serving in this capacity, effective approaches for training and supervising NSHW to ensure ethical and competent care and integrating NSHW into broader health systems and policy. Though existing reviews have touched on these issues, they were rarely a central focus of analysis and this information was not synthesised across MHPSS intervention types and contexts. This information is important because the provider is integral to intervention delivery (Spedding et al., 2014) and can help guide the development and implementation of similar programmes, including selection of the nonspecialist workforce and standardizing training, supervision and integration processes.

The aim of this umbrella review, therefore, was to synthesise the available data on NSHW used for mental health and psychosocial service delivery. In doing so, we intended to summarise the current state of knowledge regarding the NSHW workforce, approaches to supporting and sustaining NSHW in LMICs and highlight opportunities to strengthen NSHW and their essential role in MHPSS.

Methods

Overview

Umbrella reviews examine the body of information available for a given topic and address research questions which are broader in scope than those examined in individual systematic reviews (Pollock et al., 2016). We followed Aromataris et al. (2015) guidelines for an umbrella review which include the following steps: (a) a priori research questions; (b) detailed inclusion criteria including intervention, population, context and outcomes of interest; (c) identifying relevant studies; (d) selecting eligible studies; (e) formal process of data extraction and (f) summary and synthesis of findings.

Our review was guided by the following five research questions:

- (1) What are the characteristics of NSHW including types, definitions and qualifications?
- (2) Where and with whom are NSHW-delivered interventions used?
- (3) In what capacities and for what types of interventions are NSHW used?
- (4) What are the approaches to support NSHW in delivering such interventions including training, supervision, compensation and policy?
- (5) How effective are NSHW-delivered interventions in addressing mental health outcomes and what implementation challenges are encountered in delivering mental health interventions?

Search Strategy

To identify relevant studies for our review, we followed the Cochrane guidelines (Pollack et al., 2021). Our search encompassed:

- (1) Computer searches of PsycINFO, PubMed and CINAHL, which were chosen in collaboration with a research librarian for their extensive coverage of the topic in question. We developed search terms based on the three conceptual domains of NSHWs, mental health and LMICs; both controlled vocabulary (e.g. MeSH) terms and keywords were used to describe each of these domains. Additionally, search filters were added to identify systematic reviews, limit to English language and exclude child-only studies. To develop a comprehensive search for nonspecialist provider types, the search also drew from an empirically informed taxonomy for community health workers developed by Taylor et al. (2017).
- (2) A supplemental targeted search was also conducted in Google Scholar (GS) for articles with “review” or “meta” in the title, “mental” and “low and middle income” in required fields and at least one variation on these concepts: “peer”, “task”, “nonspecialists”, “lay providers” or “community”.

Inclusion and Exclusion Criteria

Peer reviewed systematic reviews written in English were included. To be as comprehensive as possible, we did not restrict the date of publication. We included systematic

reviews of nonspecialist interventions that: (a) included adults in the sample, (b) took place in an LMIC as defined by the World Bank (n.d.), (c) targeted common mental disorders or severe mental illness and (d) included information regarding the NSHW workforce such as qualifications used to select NSHW, training, supervision and compensation or policy guiding the use of NSHW. The first author (MB) and a consulting research librarian carried out the search of the databases and GS between January and February 2020. This search yielded 5760 citations; after removing duplicates, the final number of citations was 5487.

Citations were split among four of the authors (authors 1, 2, 3 and 5) to determine whether each article met inclusion criteria based upon its title and abstract. This resulted in the removal of 5378 articles due to nonrelevance to our eligibility criteria and 109 remaining articles that were once again divided among the four authors. To enhance the rigor of the review, the first author conducted a second review of the abstracts to confirm decisions for retention based on inclusion and exclusion criteria. Any discrepancies between the initial review by the four authors and the second review were discussed and resolved during weekly meetings. This resulted in the removal of four additional reviews. The authors reviewed the full-text articles for inclusion, followed by a second review by the first author to ensure the systematic application of inclusion criteria. The full-text review process resulted in the exclusion of 92 of the 109 articles due to non-relevance to the context, population, focus or article type of this review, resulting in a final sample of 17 articles. Figure 1 presents the results from the search at each stage.

Data Analysis

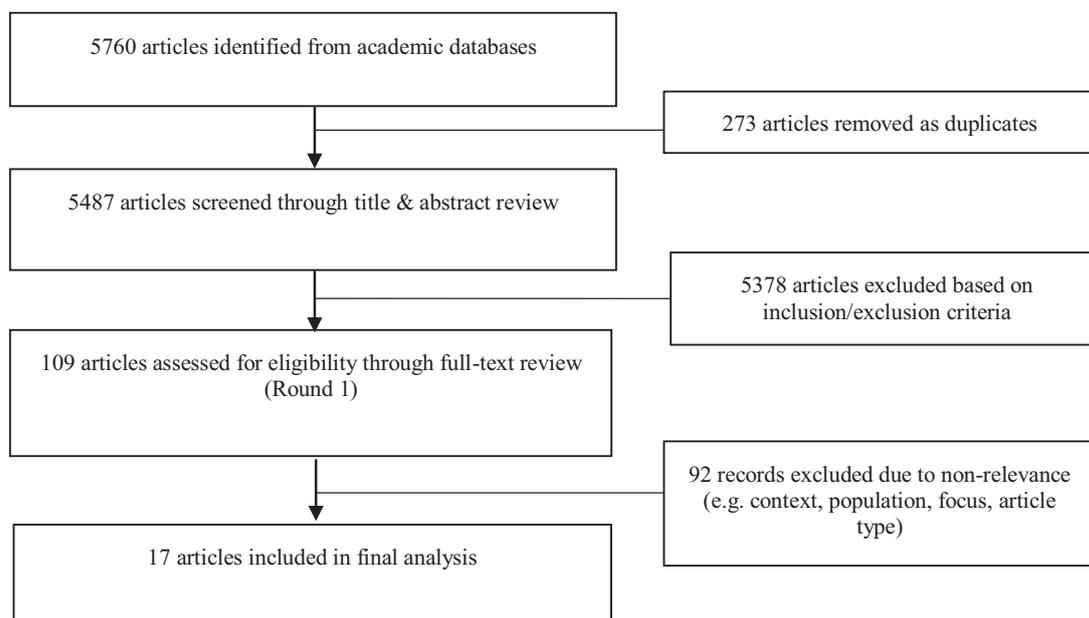
To analyse the reviews, we developed a standardised data extraction tool which tracked information about the NSHW workforce (definition, type, qualifications, characteristics,

roles) and strategies to support nonspecialists (training, supervision, compensation, policy). We also extracted data available on mental health outcomes and implementation experiences specific to the nonspecialist workforce. The data extraction tool was pilot tested with an initial set of articles, refined and finalised through discussion among the authors.

Data were extracted verbatim. To analyse the data, we drew on tabulation and summative content analysis techniques, analysing the frequency of particular phenomenon across reviews to reflect the extent to which certain processes were more or less described (Hsieh & Shannon, 2005). We also used conventional content analysis techniques to analyse narrative text, which is an inductive approach where categories are not defined a priori but identified through immersion in the data (Elo & Kyngäs, 2008).

We conducted descriptive analyses to examine where, with whom and for what mental health issues, NSHWs were utilised. To analyse intervention types, we conducted an in-depth examination of findings reported in each review article and categorised them into primary intervention types. Our analysis of the characteristics of NSHW focused on four key areas including the a priori definitions of such providers, NSHW types, workforce characteristics and qualifications. Our examination of training, supervision, compensation, policy and implementation experiences focused on those reported in the findings and discussion of the reviews. Finally, to examine the effectiveness of NSHW-delivered interventions, we analysed the mental health outcomes under investigation and outcomes associated with NSHW-delivered interventions as reported in the tables for studies employing a randomised controlled trial (RCT), nonrandomised or pre/post design. To reduce bias resulting from substantial duplication of original studies across systematic reviews, we conducted this analysis at the study level (see Cochrane guidelines in Pollack et al., 2021, refer to Appendix Table 2). We clustered the data by

Figure 1: Systematic Search and Article Review Process



the study design and examined the effectiveness of such interventions by primary mental health outcome and, where possible, by NSHW type. Given the heterogeneity in outcome measures and coding and extraction strategies used in the reviews, we conducted a narrative summary of findings.

Results

Table 1 provides an overview of the 17 reviews included in the final analysis.

What are the Characteristics and Types of NSHW?

Definitions

Fourteen reviews (82%) provided a definition of NSHW (see Table 2). Ten of these reviews characterised NSHW as individuals without specialised mental health training who received training to deliver a mental health intervention. Thus, NSHW was a broad category variously referred to as community health workers, lay health workers, lay providers, teachers, nonformal providers and allied health professionals such as doctors, nurses, midwives and health social workers. A small number of the reviews also defined NSHW by the roles they filled (e.g. outreach, education, promoting adherence, etc.; $n = 2$, 12%); where they worked

(e.g. in the community, within or outside of the healthcare system, etc.; $n = 23$, 12%) and their education and/or literacy level ($n = 2$, 12%). Shahmalak et al. (2019), for example, defined NSHWs as individuals who carried out healthcare delivery functions, were trained in some way and usually had no formal professional or paraprofessional certification or tertiary education.

Qualifications

Eight reviews (47%) specified the qualifications of NSHWs, of them, the most common qualification was having good interpersonal or communication skills ($n = 4$, 50%) and speaking and in some cases reading the local language ($n = 4$, 50%). Singla et al. (2017), for example, identified language proficiency including fluency in local dialects and communication skills as the most common qualification for nonspecialist providers delivering psychological interventions in LMICs. Three of the eight reviews ($n = 3$, 38%) stated NSHWs were selected based on personal characteristics (e.g. gender, marital status). Two (25%) noted NSHWs were selected because of their position in the community, previous experience (e.g. community volunteers; $n = 2$, 25%) and shared life experiences (e.g. mothers, HIV⁺; $n = 2$, 25%). Focusing on interventions for postnatal depression, Dixon and Dantas (2017)

Table 1: Characteristics of Included Reviews

Author	Year	Study population	World region	Primary MH area	NSHW type
Chowdhary	2014	Women and children	SSA, SA, EAP, LAC, ECA	Perinatal mental disorders	Nonspecialist
Dixon	2017	Women and children	SSA, SA, LAC, ECA	Postnatal depression	Not defined
Glenton	2013	Women and children	SSA, SA, EAP, LAC, MENA, ECA, NA, AUS	Maternal and/or child health	Lay health worker
Huang	2018	Adults and children	EAP	Not specified	Community health worker
Javadi	2017	Adults and children	SSA, SA, EAP, LAC, MENA	Mental health services and care	Lay health worker
Joshi	2014	Adults	SSA, SA, EAP	Not specified	Nonphysician healthcare worker
Kaminer	2018	Adults	SSA	Common mental disorders	Not defined
Munodawafa	2018	Women	SA, EAP	Perinatal mental disorders	Not defined
Mutamba	2013	Adults and children	SSA, SA, LAC	Mental, neurological and substance-abuse disorders	Lay health worker
Nguyen	2019	Adults	SSA, SA	Severe mental illness	Informal community care provider
Padmanathan	2013	Adults	SSA, SA	Common mental disorders	Not defined
Petersen	2014	Adults	SSA	Not specified	Lay health worker
Rahman	2013	Women and children	SSA, SA, EAP, LAC	Perinatal mental disorders	Not defined
Shahmalak	2019	Adults and children	SSA, SA, ECA	Common mental disorders	Lay health worker
Singla	2019	Adults	SSA, SA, EAP, LAC, MENA	Common mental disorders	Nonspecialist
van Ginneken	2013	Adults and children	SSA, SA, EAP, LAC, MENA, ECA	Common mental disorders, Mental, neurological and substance-abuse disorders	Nonspecialist, allied health professionals
Verhey	2020	Adults and children	SSA, SA, EAP, MENA	Common mental disorders, Mental, neurological and substance-abuse disorders	Nonspecialist

Note. SSA, Sub-Saharan Africa; SA, South Asia; EAP, East Asia and Pacific; LAC, Latin America and Caribbean; ECA, Europe and Central Asia; MENA, Middle East and North Africa; NA, North America; AUS, Australia.

Table 2: Definitions and Qualifications of Nonspecialists

Author	Year	Definition of NSHW	NSHW qualifications						
			Personal characteristics	Interpersonal skills	Community position	Education, literacy	Previous experience	Shared life experience	Health centre employee
Chowdhary	2014	Healthcare practitioners (e.g. doctors) and nonprofessionals (e.g. lay providers)				✓	✓	✓	
Dixon	2017	Not described	✓			✓			✓
Glenton	2013	No formal paraprofessional, professional, or tertiary certificate or degree; provide care for range of issues	✓	✓	✓	✓		✓	✓
Huang	2018	Community health aides; not trained health professionals; selected and trained to work in own community							
Javadi	2017	Those with or without basic literacy or some postsecondary education with informal or formal preservice training							
Joshi	2014	A lay healthcare worker with no formal medical training or nurses							
Kaminer	2018	Nurses, lay counsellors or volunteers							
Munodawafa	2018	Lay health workers, lady health workers and midwives			✓				
Mutamba	2013	Someone working as part of a community-based programme who: carried out healthcare delivery, trained for the intervention, had no professional or paraprofessional education	✓						
Nguyen	2019	Non-MH professionals including general doctors, nurses, paraprofessionals, teachers and community-level workers		✓		✓		✓	
Padmanathan	2013	Not described							
Petersen	2014	Lay health workers, no formal professional or paraprofessional qualifications and trained to provide health-related services							
Rahman	2013	Not described	✓						
Shahmalak	2019	Those carrying out healthcare delivery; trained for the intervention; usually no formal professional or paraprofessional education		✓					
Singla	2017	Anyone who provides MH care with no specialised professional clinical training in a closely related MH field		✓				✓	
van Ginneken	2013	First-level providers with general rather than specialist MH training including professionals (e.g. doctors) and nonprofessionals (e.g. lay providers)							
Verhey	2020	No specialised MH training but can deliver interventions under the supervision and training of more specialised providers							

Note. NSHW, nonspecialist health worker.

summarised articles that selected women who were mothers or raised children themselves to deliver a home-visiting intervention for postnatal depression in Chile and South Africa. Alternatively, a study conducted in Zimbabwe highlighted the provider's position within the community as an important criterion for selection as a nonspecialist (see Verhey et al., 2020). In this case, older women were selected as they were observed as respected and trusted members of the community (see Chibanda et al., 2016, 2017).

NSWH Types

Drawing on available descriptions and qualifications of NSHWs used across studies, we categorised NSHWs into six primary types including: (1) community workers, (2) health professionals, (3) peers, (4) other nonhealth professionals, (5) traditional healers and helpers and (6) trained family members.

Community Workers

Community workers, also referred to as a lady health worker, community leader, community health worker, village-based health worker or health coach, were among the most common type of NSHWs utilised, identified in 12 of the reviews (71%). These individuals were from and/or worked within the target community. In some cases, community workers were already staff within the established systems of health or social care (e.g. lay health workers, see Verhey et al., 2020). In other cases, they were drawn from the community more generally (e.g. local women, see Javadi et al., 2017). In some studies, community workers had previous training and/or professional experience (e.g. lady health workers). They delivered diverse types of MHPSS interventions targeting common mental disorders and severe mental illness. For example, community workers delivered individual and group psychotherapy and psychosocial interventions to adults with depression (Rahman et al., 2008); multicomponent home visiting services (Rotheram-Borus et al., 2015); community-based group psychosocial services to women with or at risk of maternal depression (Rahman et al., 2009); mental health awareness and education services to internally displaced persons (Yeomans et al., 2010); psychotherapy to refugees (Bolton et al., 2003) and community-based multicomponent MHPSS care for individuals with severe mental illness (Chatterjee et al., 2014).

Health Professionals

Health professionals were included in 10 reviews (59%). They were specially trained health providers with no previous mental health background or training and included but were not limited to nurses, midwives and village doctors. Health providers delivered facility- and community-based care and were often utilised independently (Chetty & Hoque, 2013) or as part of a collaborative care intervention (Araya et al., 2003). Health providers delivered a range of MHPSS services including psychosocial and mental health awareness and education interventions for maternal depression (Rojas et al., 2007),

individual therapy interventions for substance use (Mertens et al., 2014) and screening and treatment of CMDs in primary-care settings (Adams et al., 2012).

Peers

Peers were identified in nine of the reviews (53%) and were individuals selected at least in part for their shared cultural and linguistic background and life experiences including but not limited to mental health problems or experiences as a mother or primary caregiver, with forced migration or with HIV. Providers' status as a peer was not always explicit. Peers were referred to variously as peers, mothers, mentor mothers, recovered service users, survivors and lay community health workers, and they were utilised to deliver care within and outside of the existing health system. In certain instances, peers had previous experience (Dixon & Dantas, 2017); in others, they were selected with no prior MHPSS experience. Several studies utilised peers to deliver interventions for maternal depression including multicomponent home-visiting interventions (Rotheram-Borus et al., 2015). Peers also delivered individual psychotherapy interventions for refugees (Bolton et al., 2014) and forced migrants (Neuner et al., 2008) and psychosocial interventions for persons living with HIV (Moosa & Jeenah, 2012).

Other Nonhealth Professionals

Other nonhealth professionals such as NGO workers, high school teachers and social workers were included in five reviews (29%). These were professionals working in other nonhealth sectors trained to deliver MHPSS services. In this review, other nonhealth professionals were utilised, for example, to deliver psychotherapy and psychosocial interventions to persons and families with severe mental illness (Van Ginneken et al., 2013; Nguyen et al., 2019), intimate partner violence (IPV) survivors (Tiwari et al., 2010) and postpartum women (Chowdhary et al., 2014).

Traditional Healers and Helpers

Traditional healers and helpers were included in three reviews (18%). These were individuals who were skilled in a traditional, culturally relevant forms of helping or healing such as a traditional healer, traditional birth attendant or traditional village midwife. For example, traditional healers were utilised as part of a multicomponent intervention for severe mental illness (Abbo, 2011) and to support maternal mental health (Huang et al., 2018).

Trained Family Members

Trained family members were the least represented group, identified in only one review (6%). They were family members trained to deliver MHPSS to another family member. In this review, family members were trained to support medication adherence and relapse prevention for family members with severe mental illness (Huang et al., 2018).

There were a number of other NSHWs identified in the reviews which we were unable to categorise due to the

absence of information about selection criteria or qualifications, often times distinguished only by the absence of any mental health background or training (e.g. paraprofessional, lay counsellor, minimally trained counsellor).

Where and With Whom are NSHW Interventions Used?

Study Descriptives

As described in Table 1, most reviews ($n = 15$, 88%) included studies exclusively conducted in rural and urban contexts in LMICs, some of which also included protracted humanitarian crisis settings. The remaining two (12%) included studies in both LMICs and high-income countries. LMICs spanned multiple regions as defined by the World Bank (2020), including Sub-Saharan Africa ($n = 15$, 88%), South Asia ($n = 14$, 82%), East Asia and Pacific ($n = 10$, 59%), Latin America and Caribbean ($n = 8$, 47%), Middle East and North Africa ($n = 5$, 29%) and Europe and Central Asia ($n = 3$, 18%). A total of 44 countries were represented, the most common of which were Pakistan ($n = 12$, 71%), followed by India ($n = 10$, 59%), South Africa ($n = 9$, 53%) and Uganda ($n = 8$, 47%).

All of the reviews included a focus on adults (per the inclusion criteria); however, almost two-thirds ($n = 101$, 6159%) also included children and adolescents. Most focused on the general adult population, but five reviews (298%) focused solely on women during the perinatal and postpartum periods (see Table 1).

In What Capacities and for What Interventions are NSHWs Used?

Interventions and the Roles of Nonspecialists

Thirteen reviews (76%) included studies that utilised NSHW to deliver psychotherapy interventions. Nine different interventions were identified including, most commonly, cognitive behavioural therapy (CBT) followed by problem-solving therapy and nonspecific counselling (see [Supplemental Table](#)). Singla et al. (2017), for example, reviewed a group-based interpersonal psychotherapy (IPT) intervention for depression by Bolton et al. (2003) that included weekly 90-minute sessions for 16 weeks led by a local person who received 2 weeks of training from two of the study authors.

Nine reviews (53%) summarised interventions involving NSHW in the delivery of psychosocial interventions that included a range of different components including, for example, home visits or social or emotional support. In one review (Kaminer et al., 2018), NSHWs delivered a group-based craft intervention for women on antidepressants and measured whether it positively impacted participants' depression scores (see Chetty & Hoque, 2012). Another review by Chowdhary et al. (2014) described an intervention which combined an existing peer-mentoring programme, mothers2mothers, with a culturally adapted cognitive-behavioural intervention from the United States. HIV-positive pregnant women participating in the intervention were paired with mentor mothers who were also HIV-positive, had a child recently, used prevention of

mother-to-child transmission of HIV services, and were coping positively (see Futterman et al., 2010).

Nine reviews (53%) included interventions in which nonspecialists provided case management and outreach interventions. Most commonly, this included ensuring uptake and/or adherence to treatments, referrals to care and screening for mental health problems. Joshi et al. (2014), for example, described nonspecialists who could successfully screen individuals for common mental health disorders and provide either direct therapy or referrals to a general practitioner or psychiatrist (see Patel et al., 2011).

Finally, eight reviews (47%) included interventions with mental health awareness and education components. Such interventions most commonly included psychoeducation on a range of topics including symptoms, causes and consequences of mental health disorders; available treatments; treatment adherence and support; relapse prevention; problem-solving and providing information on additional resources. These interventions also included reducing stigma or improving social inclusion. One review (Munodawafa et al., 2018) described a participatory learning and action cycle intervention with a psychoeducational element led by female community health workers (see Rath et al., 2010). For a summary of primary intervention types, see Table 3.

What are the Approaches to Supporting and Sustaining NSHWs in Delivering Mental Health Interventions?

Training

All but one review ($n = 16$, 94%) included one or more studies that addressed training for NSHW (see Table 4). Of those, half (50%) described the training content of at least some of the studies, which included counselling skills, general content on mental health and technical skills specific to the intervention being studied. Five (31%) of the 16 reviews provided specifics on the delivery of training content; modalities included role plays, lectures and in vivo or field experience. For example, the review of community health worker interventions by Huang et al. (2018) indicated that lectures given by teachers or experts were the most common learning approach for community health workers, yet they also identified the use of in-class and group discussions, role-plays and web-based training. Additionally, 10 of these reviews (63%) reported on the duration of training for NSHW, which ranged from 2 hours to 4 months across reviews. Finally, three of the reviews ($n = 3$, 19%) described characteristics of the trainers and primarily described them as mental health personnel including psychiatrists, clinical psychologists or licensed professionals though one was identified as a teacher and another as a member of the research team.

Supervision

Over three-quarters of the sample ($n = 14$, 82%) reported that some form of supervision was provided to NSHW (see Table 5). Of those, half ($n = 7$, 50%) provided some details on the content of supervision, which included discussion of

Table 3: Interventions and the Roles of Nonspecialists

Author	Year	Psychotherapy (n = 14)	Psychosocial intervention (n = 10)	MH awareness & education (n = 9)	Case management & outreach (n = 9)
Chowdhary	2014	✓	✓	✓	
Dixon	2017		✓		
Glenton	2013				
Huang	2018	✓		✓	✓
Javadi	2017	✓		✓	✓
Joshi	2014	✓			✓
Kaminer	2018		✓		
Munodawafa	2018	✓		✓	
Mutamba	2013	✓	✓		
Nguyen	2019		✓	✓	✓
Padmanathan	2013	✓	✓		✓
Petersen	2014	✓			✓
Rahman	2013	✓	✓	✓	✓
Shahmalak	2019	✓	✓	✓	✓
Singla	2017	✓			
van Ginneken	2013	✓	✓	✓	✓
Verhey	2020	✓			

challenges, solutions and cases, providing support and guidance, or reviewing records. Four (29%) described the format of supervision such as individual, group, in-person or web-based. Seven reviews (50%) described the frequency of supervision, which ranged from ad hoc to monthly. For example, lady health workers in Pakistan who delivered a 16-session home-visiting, perinatal depression intervention received monthly half-day supervision throughout the 10 months of the intervention (Rahman et al., 2013), though no additional details about supervision were included.

Eleven reviews (79%) provided specifics on supervisor characteristics. In nine of these reviews, supervision was provided by specialised mental health professionals ($n = 9$, 82%), followed by other nonspecialists or peers ($n = 4$, 36%), health professionals (nurses, midwives; $n = 4$, 22%), public health personnel ($n = 4$, 36%) and research team members ($n = 2$, 18%). Glenton et al. (2013), for example, indicated that nurses and nurse midwives from the health facility provided supervision to lay health workers delivering perinatal depression interventions. In their review of mental health interventions for severe mental illness, Nguyen et al. (2019) found that psychiatrists commonly supervised NSHW or were part of a broader programme of supervision.

Compensation

Nine reviews (53%) reported on remuneration for the services NSHWs provided (see Table 6). In all but one review (89%), some NSHWs received payment, whereas others were unpaid volunteers. Payment included an allowance, stipend or compensation for travel. In their review of task shifting for mental health, Javadi et al. (2017) identified studies where lay providers were referred to as volunteers to indicate that did not receive compensation whereas others were paid.

Policy

Only one review (6%) included details pertaining to policy guiding the utilisation of NSHWs in LMICs. Several studies in the review by Huang et al. (2018) identified the integration of NSHWs into the formal health system or policy and ministry structures as important for formally establishing NSHWs and increasing their acceptability and credibility.

How Effective are NSHW-delivered Interventions in Addressing Mental Health Outcomes and What Implementation Challenges are Encountered?

Twelve of the 17 reviews described outcomes associated with the studies included in their reviews (see Table 7). In total, 116 studies were extracted across the 12 reviews; after removing duplicates (see Appendix Table 1), 70 unique studies were reviewed.

Outcomes Under Investigation

Depression was the primary mental health outcome under investigation ($n = 48$, 70%). Other mental health outcomes that were investigated include anxiety ($n = 5$, 7%; e.g. Bolton et al., 2003; Patel et al., 2011), mixed anxiety/depression ($n = 4$, 6%; e.g. Ali et al., 2003; Yeomans et al., 2010), posttraumatic stress disorder (PTSD; $n = 7$, 10%; e.g. Neuner et al., 2008), serious mental disorders ($n = 4$, 6%; e.g. Chatterjee et al., 2014) and substance use ($n = 10$, 10%; e.g. Mertens et al., 2014). Across studies, the primary outcome under investigation was symptom remission (see Appendix Table 2).

RCT Designs and Mental Health Outcomes

A total of 55 unique RCTs were reviewed. As a whole, the RCT evidence supporting NSHW-delivered interventions was favourable, particularly for depression; positive

Table 4: Training Nonspecialists

Author	Year	Training provided	Training duration	Type of trainer			Overall training approach											
				Teachers	Experts	Experienced MH personnel	Research team	Manualised	Class-based	Train-the-trainer	Develop protocols	Mixed (field & class)	None provided					
Chowdhary	2014	✓	12 hours-4 months															
Dixon	2017	✓	1 day-4 months					✓										
Glenton	2013	✓	Few days-3 months															
Huang	2018	✓		✓														
Javadi	2017	✓																
Joshi	2014	✓																
Kaminer	2018	✓				✓												
Munodawafa	2018	✓	2-5 days															
Mutamba	2013	✓	1 week-4 months															
Nguyen	2019	✓	4-6 weeks															✓
Padmanathan	2013	✓																
Petersen	2014	✓	5 days-1 year						✓									
Rahman	2013	✓																
Shahmalak	2019	✓	2 days-2 months			✓			✓									
Singla	2017	✓	3 hours-2 months															
van Ginneken	2013	✓	2 hours-2 months						✓									
Verhey	2020	✓																✓
Author	Year	Basic counselling skills		Topical MH info	Technical skills	Screening, assessment & diagnosis	Managing CMD/SMI	Theoretical approaches	Role plays	In-vivo/field work	Lecture	Group discussion	Case review					
Chowdhary	2014	✓		✓														
Dixon	2017	✓		✓														
Glenton	2013																	
Huang	2018	✓		✓									✓					
Javadi	2017																	
Joshi	2014					✓												
Kaminer	2018					✓												

(Continued)

Table 4 (Continued)

Author	Year	Training Topics					Training Method					
		Basic counselling skills	Topical MH info	Technical skills	Screening, assessment & diagnosis	Managing CMD/SMI	Theoretical approaches	Role plays	In-vivo/field work	Lecture	Group discussion	Case review
Munodawafa	2018			✓								
Mutamba	2013											
Nguyen	2019	✓			✓							
Padmanathan	2013						✓					
Petersen	2014			✓								
Rahman	2013								✓			
Shahmalak	2019	✓				✓			✓			
Singla	2017		✓					✓	✓			
van Ginneken	2013							✓	✓			✓
Verhey	2020										✓	

outcomes favouring the intervention arm were found for depressive symptoms in the majority of studies and across diverse interventions (e.g. individual psychotherapy, case management, collaborative care) and NSHW types (e.g. health professionals, community workers, peers). For example, a study reviewed by Rojas et al. (2007) found that a multicomponent collaborative care intervention delivered in primary care settings to mothers in Chile resulted in significant decreases in depression compared to treatment as usual. Significant decreases in anxiety, mixed anxiety and depression, PTSD and common mental disorders were also found among individuals in the experimental arm versus comparison groups, though many fewer RCT studies examined these outcomes compared to depression (see Appendix Table 2). For example, CBT delivered to Burmese refugees by peer providers in Thailand resulted in significant decreases in depression, anxiety and posttraumatic stress compared to those on the waitlist control (see Bolton et al., 2014 in Singla et al., 2017).

However, several studies also found significant improvements in depressive symptoms across both the experimental and comparison/control groups (e.g. Hughes, 2009; Lara et al., 2010; Pradeep et al., 2014). Others found benefit in the treatment group, though results were not significant (e.g. Cooper et al., 2009). For example, a study by Moosa and Jeenah (2012) found similar and significant decreases in depression among HIV patients who received IPT or pharmacotherapy at primary care clinics in South Africa. Yeomans et al. (2010) found no significant change in PTSD, anxiety or depression among Burundian internally displaced persons who received a trauma healing workshop with PTSD psychoeducation delivered by para-professionals compared to those who received the workshop alone. Overall, there was limited rigorous evidence on the effectiveness of NSHW-led interventions for severe mental illness, with only one study identifying an overall and significant reduction on symptoms of schizophrenia (Chatterjee et al., 2014).

Finally, findings were mixed for NSHW-intervention targeting substance use. Out of 10 RCT studies, three identified positive outcomes for reducing alcohol use and one for reducing substance use (e.g. Sutcliffe et al., 2009). Noknoy et al. (2010), for example, found significant decreases in alcohol use among adults in Thailand who received a brief counselling intervention from a health professional compared to those who did not. The remaining six RCT studies, which predominantly used health professionals to deliver psychotherapy or counselling interventions, found benefits in both the control and experimental groups (e.g. Burnhams et al., 2015; Marais et al., 2011) or did not find significant benefit (e.g. Peltzer & Davids, 2011; Pengpid et al., 2013).

Nonrandomised Studies and Mental Health Outcomes

Six studies utilised nonrandomised designs to examine the effectiveness of NSHW-led interventions on depression outcomes. Three studies had favourable findings, resulting in significant decreases in depressive symptoms (e.g. Futterman et al., 2010; Vijayakumar & Kumar, 2008).

Table 5: Supervision of Nonspecialists

Author	Year	Frequency	Format described (e.g. group, in-person)	Supervisor type				Supervision content				
				MH expert	Health prof.	Nonspecialist, peer	Public health worker	Research team	Discussion	Use of observation	Share experiences, support	Review records
Chowdhary	2014	Weekly or monthly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dixon	2017	Fortnightly, weekly or monthly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Glenton	2013			✓								
Huang	2018			✓								
Javadi	2017			✓								
Joshi	2014											
Kaminer	2018	Weekly for 2 months, then monthly		✓								
Munodawafa	2018	Half a day a month		✓					✓			
Mutamba	2013	/Regular/										
Nguyen	2019	Weekly, monthly or ongoing		✓								
Padmanathan	2013											
Petersen	2014											
Rahman	2013											
Shahmalak	2019					✓					✓	
Singla	2017			✓		✓			✓		✓	
van Ginneken	2013	Ad hoc, every 2 weeks, weekly or monthly	✓	✓				✓	✓			
Verhey	2020		✓			✓						✓

Petersen et al. (2012), for example, demonstrated a significant reduction in depressive symptoms on completion of a 12-week group-based IPT intervention as well as 24 weeks postbaseline compared to the control (control intervention unknown). The remaining three studies found benefits for both intervention and control groups (e.g. Ali et al., 2010) or results were not significant (e.g. Cooper et al., 2002; Morris et al., 2012).

Pre/Post test Design and Mental Health Outcomes

Nine studies utilised a pre/post test design to examine the effectiveness of NSHW-led interventions on depression ($n=6$) and severe mental illness ($n=3$). For depression, four studies identified favourable results, with depression scores decreasing over the course of the intervention (e.g. Adams et al., 2012; Zámbari et al., 2002). For example,

Chibanda et al. (2011) identified a reduction in mean depression scores following delivery of problem-solving therapy to adults in Zimbabwe. One study, however, found comparable benefits between the intervention and control (e.g. Tezel & Gözümlü, 2006) and one found no change in depression scores (e.g. Thurman et al., 2014). Three studies identified reductions in symptoms of severe mental illness (e.g. Lund et al., 2013; Padilla et al., 2015). Abbo (2011), for example, found improvements in symptoms of schizophrenia and mania among adults in Uganda who were screened and received care from a traditional healer.

Implementation Challenges Related to NSHWs

Nine reviews ($n=9$, 53%) cited various challenges with NSHW roles and capacity. These were related to the NSHW work environment ($n=6$, 67%) such as poor role definition, increased work pressure, lack of professional advancement opportunities and challenging work conditions which, in turn, negatively affected NSHW motivation. Challenges were also noted with the relationship between the NSHW and target population ($n=4$, 44%; e.g. boundaries, confidentiality) and problems in the working relationship between NSHW and health professions ($n=2$, 22%; e.g. lack of appreciation for the role of NSHW, skepticism regarding their capacity). For example, community health aids in Jamaica described difficulties performing multiple tasks over and above their standard clinic duties (Baker-Henningham et al., 2005). The Petersen et al. (2014) review also summarised challenges related to lay counsellors feeling excluded from the professional hierarchy and negative perception of lay counsellors by other healthcare staff.

A number of challenges related to training NSHWs were also identified ($n=7$, 41%), such as the need for more training ($n=3$, 43%) or for peer supervision and networking. For example, psychosocial counsellors and managers in Nepal expressed a need for advanced counsellor training, regular supervision and networking opportunities with

Table 6: Compensation of Nonspecialists

Author	Year	Type of compensation		
		Unpaid	Paid	Nonmonetary incentive
Chowdhary	2014			
Dixon	2017			
Glenton	2013	✓	✓	✓
Huang	2018	✓	✓	
Javadi	2017	✓	✓	
Joshi	2014			
Kaminer	2018			
Munodawafa	2018			
Mutamba	2013	✓	✓	
Nguyen	2019			
Padmanathan	2013			
Petersen	2014	✓	✓	
Rahman	2013	✓	✓	
Shahmalak	2019	✓		
Singla	2017			
van Ginneken	2013	✓	✓	✓
Verhey	2020	✓		✓

Table 7: Challenges with Implementation by Reviews

Author	Year	NSHW roles & capacity	Training	Supervision	Stress & burnout	Macro
Chowdhary	2014	✓	✓		✓	✓
Dixon	2017	✓		✓		✓
Glenton	2013	✓	✓	✓		✓
Huang	2018	✓	✓			✓
Javadi	2017	✓	✓	✓		✓
Joshi	2014	✓				
Kaminer	2018					
Munodawafa	2018					
Mutamba	2013	✓		✓		✓
Nguyen	2019					
Padmanathan	2013	✓	✓	✓	✓	
Petersen	2014	✓	✓	✓	✓	✓
Rahman	2013					
Shahmalak	2019	✓	✓	✓	✓	✓
Singla	2017		✓	✓		✓
van Ginneken	2013					
Verhey	2020					

other counsellors (see Jordans et al., 2007 in Padmanathan & De Silva, 2013). In their review, Shahmalak et al. (2019) described lay health workers feeling that insufficient information was given during training and not enough time allowed for training regarding mental health issues.

Other challenges related to training included the lack of any formal or standardised training approach ($n = 2$, 29%), lack of assessments to determine the nonspecialist's competence ($n = 2$, 29%), low fidelity to training models ($n = 1$, 14%) and low competence levels despite training ($n = 1$, 14%). For example, Glenton et al. (2013) identified the lack of assessment methods in a lay health worker maternal and child health intervention as a major challenge in determining NSHW competence and quality of intervention delivery.

Half of the reviews ($n = 8$, 47%) described supervision challenges for the field as a whole including the need for ongoing, structured supervision and, relatedly, the high cost of maintaining supervision. Singla et al. (2017) described such issues as barriers to the wider adoption of NSHW-delivered psychological treatments. They identified an ongoing reliance on face-to-face methods of supervision and discussed alternative approaches including digital technologies, standardised competency tools and strengthening evidence on peer supervision as important areas in need of attention and evaluation.

Four reviews (22%) highlighted the necessity of attending to issues of burnout, work-related stress and managing emotional wellbeing as part of supervisory practices for NSHWs but indicated such topics are notably absent in the studies reviewed. The review by Petersen et al. (2014) included the only study that specifically included stress reduction techniques and coping to help manage job-related stress (see Fourie et al., 2008).

Finally, nine of the reviews (53%) described macro-level challenges related to scaling up NSHW interventions ($n = 4$, 44%) and system-related barriers ($n = 5$, 56%) such as leadership and infrastructure, integrating NSHW into health systems where they did not previously operate, and national, political and socioeconomic factors. Studies in the review by Petersen et al. (2014), for example, described the need for policy to guide the integration and scale up of NSHW-delivered interventions, including specific labour protection laws for lay counsellors. Specifically, they describe the absence of such policies as demoralizing for lay counsellors and leads to poor work motivation, stress and drop out.

Discussion

The purpose of this review was to summarise the current state of knowledge regarding approaches to supporting and sustaining NSHWs in LMICs and highlight opportunities to strengthen NSHW and their essential role in MHPSS. Consistent with the emphasis on task shifting as an important strategy for closing the treatment gap in LMICs, studies in this review encompassed all major regions of the world. Most studies focused on the use of NSHWs for

depression with a subset focused specifically on peri/postnatal depression. We found less literature on the use of NSHWs for other common mental disorders (e.g. anxiety, PTSD, substance use) and very limited literature focused on severe mental illness, highlighting the need to strengthen the evidence in this area. Our analysis of RCTs indicated NSHW-delivered interventions were found to be effective, particularly for reducing depression. These findings highlight the potential of a diverse range of MHPSS interventions delivered by various NSHW providers to affect meaningful change.

Further, NSHWs delivered a diverse range of mental health interventions. From within the broader categories of interventions, we found NSHWs implemented a wide variety of tasks including direct provision of a range of individual-, group- and family-level mental health care; psychosocial support through methods including home visitation, mentoring and case management; and providing psychoeducation or engaging in activities to reduce stigma and increase mental health awareness. NSHW also implemented interventions in a range of contexts including in healthcare, home and community settings. These findings suggest multiple pathways for integrating NSHW into MHPSS interventions or as part of a larger task sharing strategy to address gaps in mental health care.

Additionally, there were a range of potentially important qualifications for NSHWs including personal traits, interpersonal skills and shared life experience, some of which were thought to facilitate greater integration, acceptability and trust with target populations (e.g. Huang et al., 2018; Javadi et al., 2017; Munodawafa et al., 2018; Padmanathan & De Silva, 2013; Verhey et al., 2020). Moreover, we detected six different NSHW groups utilised in MHPSS. This typology can inform future research and move forward consensus building efforts around NSHW types, definitions and qualifications. The descriptions of training and supervision also provide a range of possible approaches, topics and competencies that NSHW needed to develop, which were likely not exhaustive. This included the importance of general, technical and administrative skills, utilising diverse formats to convey information to adult learners, and task-focused and supportive supervision approaches.

However, the results of this review also revealed significant gaps in need of urgent attention. This includes a need for greater specificity regarding the NSHW workforce, strengthening the empirical evidence on how to train, supervise and compensate nonspecialists, and understanding how to integrate NSHWs into health systems and policies. Moreover, as some robust studies indicated promising findings, others did not find any discernible differences in common mental disorder outcomes compared to the comparison/control condition, or that the intervention group fared worse. Additionally, the evidence base was very mixed for substance use and quite limited for severe mental illness. Several findings warrant additional explanation.

First, there was significant heterogeneity of language used to characterise and name NSHWs, including community health worker, paraprofessional and lay provider. We found both an overall lack of description for categorizing NSHW and their qualifications and no clear consensus among the reviews on these issues, which makes it difficult to ascertain which qualifications contributed to successful implementation of NSHW interventions. On the basis of this review, we conclude the term NSHW or other similar umbrella terms (e.g. lay providers) is too broad and limits the advancement of NSHW interventions. In lieu of this, we advocate for use of specific NSHW types (e.g. peers, community workers) building on what has been identified in this review and which are tied to meaningful definitions, qualifications and core competencies (Xiong et al., 2019). There are some important initiatives underway that focus on identifying core competencies and methods for evaluating the skills of NSHWs who deliver evidence-based psychotherapy and psychosocial interventions (Kohrt et al., 2020). In this review, however, we found that nonspecialists also deliver interventions focused on mental health awareness and education, and function in case management and outreach roles. Building on these efforts, additional research is required to map these intervention types to specific roles and core competencies which can serve as a framework for the MHPSS field more broadly. Such a framework can also inform development of standards for training and supervision that are needed to support NSHW and ensure competent service delivery.

Second, the descriptions of training were inconsistent and limited and the current state of the literature limits conclusions regarding necessary components for training and the relative effectiveness of these approaches. Further, though supervision is recognised as an essential component in a provider's skill development (Kemp et al., 2019), details pertaining to supervision were also limited and highly variable, and are frequently not addressed in intervention delivery (IFRC, n.d.). Several authors identified this as a major limitation in the global mental health field (e.g. Dixon & Dantas, 2017; Javadi et al., 2017). To address these gaps, researchers must include robust details about the specific NSHW workforce in their studies, their roles in interventions and how they are trained, supervised and supported (Singla et al., 2017). Such details will contextualise study findings and enhance understanding about what is required to achieve meaningful outcomes. Moreover, this will allow for the development of an evidence base by NSHW subgroup, and eventually comparisons of effectiveness between NSHW subgroups. Beyond descriptions of what is already being done, we can also leverage implementation science, testing the impact of diverse training and supervision approaches, for example, alongside questions of effectiveness (Betancourt & Chambers, 2016; Theobald et al., 2018). Along these lines, we also identified very little specific attention to issues of self-care, burnout and secondary trauma (Padmanathan & De Silva, 2013). This is surprising given that NSHWs are often, by definition, drawn from the same communities as service recipients and thus likely share similar vulnerabilities. Moreover, working in mental health in LMICs poses

unique challenges to providers, including exposure to stressors, stigma and trauma, which can lead to or exacerbate mental health problems, traumatisation and burnout (Ager et al., 2012; Curling & Simmons, 2010). As there is limited research specific to MHPSS in LMICs, existing best practices recommend ongoing assessment of staff wellbeing and suggest a combination of individual- and organisational-level supports may produce the most beneficial and long-lasting results (Awa et al., 2010). An increased focus on nonspecialist wellbeing and integration of such strategies is critical for the long-term health of NSHWs and the sustainability of these interventions.

Third, although a number of studies identified the integration of nonspecialists into policy and health systems as necessary for NSHW programmes (e.g. Javadi et al., 2017; Petersen et al., 2014), our findings reveal limited attention to such issues in research. As such, there is a clear need for system-level thinking especially policy work and investments that incorporate NSHW into health systems (Woodward et al., 2021). This requires governments and ministries of health to build and develop mental health systems more broadly, including NSHWs as a critical mental health workforce, clarifying their role in the bigger picture of mental health service delivery, and outlining guidelines for compensation. In other health sectors, integration of community health workers into the health system allowed these programmes to be sustained in times of political upheaval or shifting donor priorities (Scott et al., 2018). At the provider level, formal integration has been found to increase acceptability of nonspecialist workers and facilitate better collaboration between nonspecialists and other healthcare staff. Unfortunately, there are few examples of this kind of integration in the mental health sector in LMICs (Maes & Kalofonos, 2013; Pathare et al., 2018). Such initiatives must emphasise the local context including the voices of nonspecialists, researchers and health leaders in LMICs (Ostrow & Adams, 2012; Puschner, 2018).

Finally, although many of the studies utilised rigorous research designs and found favourable outcomes across common mental disorders, the lack of specificity as noted above precludes a complete understanding of the effectiveness of these interventions. In fact, these findings raise additional questions about the critical ingredients needed to utilise NSHW in addressing mental health needs across LMICs. Cited implementation challenges pertaining to a lack of structure around training and supervision and barriers to inclusion of NSHW within existing health systems, coupled with a lack of policy directives, suggest the need for NSHW has in many ways outstripped our knowledge about the most effective ways to develop, implement and sustain NSHW-delivered interventions.

Limitations

As is true with any review, our study is limited by the information available in articles. In many cases, information related to the roles, qualifications, training and supervision, compensation and policy pertaining to nonspecialists was not available in review articles, perhaps

because they were not described in the original studies. Though we sought to characterise the effectiveness of NSHW interventions, only 12 of the 18 reviews reported on mental health outcomes and we were only able to provide a narrative synthesis of findings due to diversity of outcomes, interventions and available data. Moreover, in focusing on the empirical literature, this study does not account for information available in the grey literature (e.g. agency evaluations) which may offer additional nuance about workforce development issues and approaches for NSHW. This is an important area for future research.

Conclusion

Task sharing to nonspecialists is the primary strategy in global mental health for bridging the divide between widespread mental health needs and limited access to care and treatment. Without a nonspecialist workforce, there would be little to no MHPSS interventions in LMICs. Yet, evidence from this review demonstrates that nonspecialists have received far too little attention, despite the fact that the task sharing enterprise rests so heavily upon them. Moving forward, we must better understand the varying needs and requirements of NSHWs and develop best practice approaches to provide adequate support that can sustain them in the long-term. This requires starting with a common language for NSHWs and a framework that specifies nonspecialist types, qualifications, roles and core competencies. It also requires investments that aim to strengthen mental health systems in LMICs, with policies that clearly identify the roles and responsibilities of NSHWs and fair compensation within the broader mental health service delivery system. Additional research is also needed that focuses on the development and evaluation of new training, supervision and support models.

Authors' contributions

MB takes responsibility for the integrity of the work as a whole from inception to published article and is designated as guarantor. The manuscript has been read and approved by all the authors and represents honest work. Additional details about author's contributions are as follows:

- (1) Conception or design of the work – MB, MA, SW
- (2) Data collection – MB, NG, IF, MA
- (3) Data analysis and interpretation – MB, NG, IF, MA
- (4) Drafting the article – MB, NG, MA
- (5) Critical revision of the article – MB, NG, MA, SW

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Conflicts of interest

There are no conflicts of interest.

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Appendix Table 1: Studies Included in Multiple Reviews

Author (Year)	Chowdhary	Dixon	Javadi	Joshi	Kaminer	Munodawafa	Mutamba	Nguyen	Petersen	Rahman	Singla	van Ginneken
Ali et al. (2003)							✓				✓	✓
Ali et al. (2010)			✓				✓					
Aracena et al. (2009)	✓	✓										
Araya et al. (2003)											✓	✓
Baker-Henningham et al. (2005)	✓	✓					✓			✓		✓
Bolton et al. (2003)											✓	✓
Bolton et al. (2014)			✓								✓	✓
Chatterjee et al. (2014)			✓					✓				
Chen et al. (2000)											✓	✓
Cooper et al. (2009)	✓	✓					✓			✓		
Cooper et al. (2002)		✓					✓			✓		
Dybdahl (2001)											✓	✓
Fritsch et al. (2007)											✓	✓
Gao et al. (2010)											✓	✓
Gao et al. (2012)						✓						
Hirani et al. (2010)	✓										✓	✓
Ho et al. (2009)												
Lund et al. (2013)			✓					✓				
Neuner et al. (2008)			✓									✓
Patel et al. (2010)			✓								✓	✓
Patel et al. (2011)			✓	✓								
Petersen et al. (2012)				✓					✓			
Rahman et al. (2009)		✓								✓		✓
Rahman et al. (2008)	✓	✓		✓						✓	✓	✓
Rojas et al. (2007)	✓											
Tezel et al. (2006)	✓											
Tiwari et al. (2010)	✓	✓									✓	✓
Tripathy et al. (2010)	✓	✓								✓		✓
Yeomans et al. (2010)							✓					✓

Appendix Table 2: Mental Health Outcomes by Study

Author	Year	Sample	Intervention	Provider	NSHW Type	Measure	Findings	Findings Key
Randomised Control Trial (RCT): Depression								
Araya	2003	Women ages 18–70 years in Chile w/ persistent depression; majority were housewives from deprived areas	Multicomponent & collaborative care (IP, MHAE)	PC physician and group leaders (nonmedical worker)	Health professional & community worker	HDRS; GHQ-12	Significant decrease in symptoms within the experimental group	+
Baker-Henningham et al.	2005	Mothers of undernourished children enrolled in nutrition clinics in government health centres in Jamaica	MH awareness & education	Community health aides, paraprofessionals employed in government health centres	Community worker	CES-D	Significant decrease in symptoms within the experimental group	+
Bolton et al.	2003	Adults w/ depressive symptoms from 15 villages in Uganda	Psychosocial intervention	Group leader (9/10 who completed training)	Community worker	HSLC; Mollica DSM-IV algorithm for A, C and E criteria	Significant decrease in symptoms within the experimental group	+
Bolton et al.	2014a	Survivors of systematic violence	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Bolton et al.	2014b	Burmese refugees who are survivors of violence	Individual psychotherapy	Lay counsellors	Peers	Unknown	Significant decrease in symptoms within the experimental group	+
Chen et al.	2000	Mothers in Taiwan at 2–3 days postpartum	Psychosocial intervention	Registered nurse	Health professional	Taiwanese BDI	Significant decrease in symptoms within the experimental group	+
Chetty	2012	30 Indian South African women on antidepressants	Psychosocial intervention	Volunteers	Undetermined	BDI	Significant decrease in symptoms within the experimental group	+
Chetty	2013	30 Indian South African women on antidepressants	Psychosocial intervention	Psychiatric nurses	Health professional	BDI	Significant decrease in symptoms within the experimental group	+
Chitbanda et al.	2013	Postpartum mothers	Psychosocial intervention	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Cooper et al.	2009	Women in their third trimester scheduled for coronary artery bypass surgery	Case management & outreach	Lay community health workers	Peer (all were mothers selected in consultation with the local community council)	SCID; EPDS	Significant decrease in symptoms within the experimental group at 6 months, no significant findings at 12 months	+/*
DeKlerk	2004	White Afrikaans-speaking males scheduled for coronary artery bypass surgery	Individual psychotherapy	Not described	N/A	BDI-II; POMS	Significant decrease in BDI scores within the experimental group; no difference in POMS scores	+/*
Fritsch	2007	Chilean women w/ depression living w/ a child ages 6–16	Collaborative care (CMO, MHAE)	Generalist doctors/GP (1 per practice) and nonprofessional trained staff from 5 clinics	Health professional & community worker	Diagnosis of depression: MINI; severity of symptoms: HDRS	Significant decrease in symptoms within the experimental group	+
Gao et al.	2010	New mothers (28.4; 21–35)	Group interpersonal therapy	Not described	N/A	EPDS, GHQ-12 and SWIRS	Significant decrease in symptoms within the experimental group	+

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Appendix Table 2 (Continued)

Author	Year	Sample	Intervention	Provider	NSHW Type	Measure	Findings	Findings Key
Gao	2012	Middle class first-time mothers under age of 35 w/ uncomplicated pregnancies, PPD symptoms and no family history of psychiatric illness	Individual psychotherapy	Midwife educator	Health professional	EPDS	Significant decrease in symptoms within the experimental group	+
Gao et al.	2015	Pregnant mothers	MH awareness & education	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Hirani et al.	2010	Women in adult literacy programmes in Pakistan	Multicomponent (CMO, PI)	CHWs	Community worker	BDI-II	Significant decrease in symptoms within the experimental group	+
Ho et al.	2009	Married women ages 20–25 who had a spontaneous vaginal delivery	MH awareness & education	Not described	N/A	EPDS	Significant decrease in symptoms within the experimental group	+
Hughes	2009	Women in their third trimester who speak English or Konkani	Multicomponent (MHAE, CMO)	Not described	N/A	EPDS	No significant findings	*
Lara et al.	2010	Adults less than 26 weeks pregnant and completed primary school	Multicomponent (MHAE, PI)	Not described	N/A	SCID-I; BDI-II	Significant decrease in major depression in experimental group; significant decrease in BDI-II scores in control and experimental groups	+/-
Le Roux	2009	Adults ages 65+ at a long-term care facility	Psychosocial intervention	A qualified “Pets as Therapy” dog and handler	Other nonhealth professional	BDI, BAI	Significant decrease in symptoms within the experimental group	+
Mao et al.	2012	Adult with single pregnancy	Multicomponent (IP, PI)	Not described	N/A	PHQ 9; EPDS; SCID-I	Significant decrease in symptoms within the experimental group	+
Milani et al.	2015	Postpartum mothers	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Moosa & Jeenah	2012	HIV+ patients attending an HIV clinic	Individual psychotherapy	Study investigator	Other nonhealth professional	HDRS	Significant decrease in symptoms within the experimental group	+
Patel et al.	2011	Not described	Individual psychotherapy	Lay health counsellor	Undetermined	Not described	Significant decrease in symptoms within the experimental group	+
Peterson	2014	HIV+ participants	Psychosocial intervention	Lay HIV counsellors	Community worker	SRQ-20; PHQ 9; HSCL-25	Significant decrease in symptoms within the experimental group	+
Pradeep et al.	2014	Adults with depression	Multicomponent (MHAE, CMO)	Community health workers	Community worker	Not described	No significant findings, but seeking and adhering to treatment higher in experimental group	*
Rahman	2007	Depressed mothers of low socioeconomic status ages 17–40 in their perinatal period	Individual psychotherapy	Lady health workers	Community worker	HDRS	Significant decrease in symptoms within the experimental group	+
Rahman et al.	2008	Married Pakistani women in their third trimester w/ perinatal depression	Multicomponent (MHAE, IP)	Lady health workers	Community worker	HDRS; SCID-I	Significant decrease in symptoms within the experimental group	+
Rahman et al.	2009	Married women ages 17–40 in the third trimester who registered w/ a lay health worker	Multicomponent (MHAE, PI)	Lay health worker	Community worker	SCAN	Significant decrease in symptoms within the experimental group	+
Rath	2010			Undetermined		K10		+

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Appendix Table 2 (Continued)

Author	Year	Sample	Intervention	Provider	NSHW Type	Measure	Findings	Findings Key
Rojas	2007	Pregnant women and mothers ages 15–49 Mothers w/ major depression attending postnatal clinics w/ index children <1 year in Chile	MH awareness & education Multicomponent & collaborative care (MHAE, CMO)	Female community health workers Physicians, group leaders (midwives or nurses), a trained nonprofessional person-	Health professional & undetermined	EPDS	Significant decrease in symptoms within the experimental group Significant decrease in symptoms within the experimental group at 3 months; no difference at 6 months	+/*
Rotheram-Borus et al.	2015	Mothers	Multicomponent (MHAE, CMO)	Mentor Mothers (CHWs)	Peer	Not described	Significant decrease in symptoms within the experimental group	+
Singla et al.	2015	Mothers with children <3 years	Multicomponent (IP, MHAE)	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Tiwari et al.	2010	Chinese women survivors of intimate partner violent	Psychosocial intervention	Research assistants (social workers)	Other nonhealth professional	BDI-II	Significant decrease in symptoms within the experimental group	+
Tripathy et al.	2010	Open cohort of women ages 15–49 and just gave birth	Psychosocial intervention	Peer facilitators who were local woman identified by community	Peer	K10	No significant findings, but prevalence of moderate depression lower in experimental versus control group	*
Weiss et al.	2015	Torture survivors	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
RCT: Anxiety								
Bolton et al.	2014a	Survivors of systematic violence	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Bolton et al.	2014b	Burmese refugees who are survivors of violence	Individual psychotherapy	Lay counsellors	Peers	Unknown	Significant decrease in symptoms within the experimental group	+
Constant	2014	Women undergoing early medical abortion	Psychosocial intervention	Not described	N/A	HADS; Adler's 12-item emotional scale; IESR	Significant decrease in symptoms within the experimental group	+
Le Roux	2009	Adults ages 65+ at a long-term care facility	Psychosocial intervention	A qualified "Pets as Therapy" dog and handler	Other nonhealth professional	BDI, BAI	No significant findings	*
Patel et al.	2011	Not described	MH awareness & education	Lay health counsellor	Undetermined	Not described	Significant decrease in symptoms within the experimental group	+
RCT: Mixed Anxiety and Depression								
Ali et al.	2003	124 lower-middle class Pakistani women ages 18–50 years w/ depression	Individual psychotherapy	Women briefly trained from the same community	Community worker	AKUADS	Significant decrease in symptoms within the experimental group	+
Bass et al.	2013	Female survivors of sexual violence	Multicomponent (IP, PI)	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Gao et al.	2010	New mothers (28.4; 21–35)	Group interpersonal therapy	Not described	N/A	EPDS, GHQ-12, and SWIRS	Significant decrease in symptoms within the experimental group	+
	2010			Burundian facilitators	Community workers		No significant findings	*

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Appendix Table 2 (Continued)

Author	Year	Sample	Intervention	Provider	NSHW Type	Measure	Findings	Findings Key
Yeomans et al.		Burundi adults in internally displaced camps	MH awareness & education			Hybrid HSCL-25 & -58; HTQ-IV w/ HTQ-b		
RTC: PTSD								
Bass et al.	2013	Female survivors of sexual violence	Multicomponent (IP, PI)	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Bolton et al.	2014a	Survivors of systematic violence	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Bolton et al.	2014b	Burmese refugees who are survivors of violence	Individual psychotherapy	Lay counsellors	Peers	Unknown	Significant decrease in symptoms within the experimental group	+
Dybdahl	2001	Bosnian displaced mother-child dyads	Psychosocial intervention	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Neuner et al.	2008	Adults in a refugee settlement in Uganda	Individual psychotherapy	LHW (residents of refugee camps trained in counselling)	Peers	PDS; CIDI	Significant decrease in symptoms within the experimental group	+
Weiss et al.	2015	Torture survivors	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
Yeomans et al.	2010	Burundi adults in internally displaced camps	MH awareness & education	Burundian facilitators	Community worker	Hybrid HSCL-25 & -58; HTQ-IV w/ HTQ-b	No significant findings	*
RCT: Common Mental Disorders								
Patel et al.	2010	Adults in India who have difficulty w/ hearing, speaking or cognition	Multicomponent (IP, MHA/E)	Lay health counsellor	Community worker	GHQ-12; CIS-R	Significant decrease in symptoms within the experimental group	+
Rotheram-Borus	2014	HIV+ women	Individual psychotherapy	Not described	N/A	Unknown	Significant decrease in symptoms within the experimental group	+
RCT: Substance Use								
Burnhams	2015	Municipal workers	Psychosocial intervention	Locally recruited volunteers	Undetermined	Questionnaire developed by the researchers	Significantly lower alcohol use in experimental group; decrease in alcohol use in both groups	+/-
Kalichman et al.	2008	Adults in South Africa who drink at informal alcohol serving shops (i.e. shebeens)	MH awareness & education	Not described	N/A	Unknown	Significant decrease in behaviours of interest within the experimental group	+
Marais	2011	Pregnant women	Individual psychotherapy	Trained fieldworkers	Undetermined	AUDIT	Significantly lower alcohol use in experimental group; decrease in alcohol use in both groups	+/-
Mertens	2014	Public health clinic patients	Individual psychotherapy	Primary healthcare nurses	Health professional	ASSIST	Significantly lower ASSIST scores in experimental group; no difference between groups in behaviours of interest	+/-

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Appendix Table 2 (Continued)

Author	Year	Sample	Intervention	Provider	NSHW Type	Measure	Findings	Findings Key
Noknoy	2010	Adults in Thailand w/ AUDIT score ≥8	Individual psychotherapy	Nurses	Health professional	AUDIT; health survey questionnaire	Significant decrease in symptoms within the experimental group	+
Papas	2011	Kenyan adults enrolled in AMPATH HIV outpatient attending the Eldoret clinic meeting substance use criteria	Individual psychotherapy	CBT counsellor	Undetermined	Unknown	Significant decrease in symptoms within the experimental group	+
Peltzer	2013	Tuberculosis patients at public health clinics	Individual psychotherapy	Nurses and lay HIV counsellor	Health professional	AUDIT	No significant findings	*
Pengpid	2013a	392 hospital outpatients	Individual psychotherapy	Assistant nurse counsellors	Health professional	AUDIT	No significant findings	*
Pengpid	2013b	152 university students	Individual psychotherapy	Assistant nurse counsellors	Health professional	AUDIT	No significant findings	*
Sutcliffe et al.	2009	152 university students	MH awareness & education	Peer educators	Peer	Unknown	Significant decrease in behaviours of interest within the experimental group	+
RCT: Serious Mental Illnesses								
Chatterjee et al.	2014	Those ages 16–60 years with the primary diagnosis of schizophrenia	Multicomponent (IP, MHAEE)	Community health worker	Undetermined	PANSS; IDEAS	Significant decrease in symptoms within the experimental group	+
Non-randomised controlled study: Depression								
Ali et al.	2010	102 postpartum women w/ depression, w/ children ages 0–30 months	Individual psychotherapy	Women CHWs	Community worker	AKUADS	Significant decrease in symptoms in experimental and control groups	+-
Cooper et al.	2002	Two groups of women–infant dyads recruited in late pregnancy from defined areas of Khayelitsha	Case management & outreach	Community workers	Community worker	SCID; EPDS	No significant findings, but prevalence of depression lower in experimental group	*
Futterman	2010	Pregnant women attending maternity health clinics who were HIV+	Psychosocial intervention	Mentors who were HIV+, had a child recently, used PMTCT services, and were coping positively	Peer	CES-D	Significant decrease in symptoms within the experimental group	+
Morris et al.	2012	Mothers at feeding centres w/ moderately or severely malnourished infants ages 6–30 months	Multicomponent (IP, PI)	Nonmental health specialists	Peer	Kitgum Maternal Mood Scale	No significant findings	*
Petersen et al.	2012	Not described	Psychosocial intervention	Lay counsellors	Undetermined	BDI	Significant decrease in symptoms within the experimental group	+
Vijayakumar & Kumar	2008	Nonmigrant adults who lost a close family member	Psychosocial intervention	Volunteers	Undetermined	BDI; GHQ; WHO-5; scale developed using PTSD diagnostic criteria	Significant decrease in symptoms within the experimental group	+
Pre- and posttest assessment: depression								
Adams	2012	Not described		Nurses	Healthcare provider	PHQ-9	Significant decrease in symptoms within the experimental group	+

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Appendix Table 2 (Continued)

Author	Year	Sample	Intervention	Provider	NSHW Type	Measure	Findings	Findings Key
Chibanda	2011	Not described	Case management & outreach Multicomponent (IP, CMO)	Nonphysician healthcare workers (NPHWs) PC doctors	Undetermined	Shona Symptom Score	Significant decrease in symptoms within the experimental group	+
Lyketos	1999	Adults w/ childbearing potential	Case management & outreach Multicomponent (PI, MHAE)	Nurse researcher	Healthcare provider	Clinical outcomes; HDRS	Significant decrease in symptoms within the experimental group	+
Tezel et al.	2006	Women without major depression symptoms at risk of postpartum depression	Case management & outreach	Lay volunteers and trained paraprofessionals	Undetermined	Not described	No significant findings	*
Thurman et al.	2014	Children and caregivers	Case management & outreach	GP	Healthcare provider	BDI, QLDS; DIS, Hungarian version	Significant decrease in symptoms within the experimental group	+
Zambori	2002	Hungarian adults attending general practices or psychiatrist	Case management & outreach	GP	Healthcare provider	BDI, QLDS; DIS, Hungarian version	Significant decrease in symptoms within the experimental group	+
Pre- and Post test Assessment: Serious Mental Illnesses								
Abbo	2011	146 patients having psychotic illness	Case management & outreach	Traditional healer	Traditional healer	IDEAS	Significant decrease in symptoms within the experimental group	+
Lund et al.	2013	Adults w/ severe mental/neurological disorder	Multicomponent (IP, PI)	Community-based health worker	Community worker	GHQ-12; GAF; WHOQOL-BREF	Significant decrease in symptoms within the experimental group	+
Padilla et al.	2015	672,260 population of province studied >7 years for DUP	MH awareness & education	Health agents	Community worker	Not described	Significant decrease in symptoms within the experimental group	+

*Notes. CMO, case management and outreach; IP, individual psychotherapy; MHAE, mental health awareness and education; PI, psychosocial intervention; AKUADS, Aga Khan University Anxiety and Depression Scale; ASSIST, Alcohol Smoking and Substance Involvement Screening Test; AUDIT, Alcohol Use Disorders Identification Test; BAI, Beck anxiety inventory; BDI/ BDI-II, Beck depression inventory; CES-D, Center for Epidemiological Studies Depression; CIS-R, Clinical Interview Schedule-Revised; CIDI, Composite International Diagnostic Interview; DIS, Diagnostic Interview Schedule; EPDS, Edinburgh postnatal depression scale; GHQ/GHQ-12, 12-item General Health Questionnaire; GAF, Global Assessment of Functioning; HDRS, Hamilton depression rating scale; HTQ-IV, Harvard Trauma Questionnaire; HTQ-b, Harvard Trauma Questionnaire-b (guilt, loneliness, shame, betrayal and rumination); HSCL, Hopkins Symptom Checklist; HSCL-25, Hopkins Symptom Checklist-25; HSCL-58, Hopkins Symptom Checklist-58; HADS, hospital anxiety and depression scale; IDEAS, Indian disability evaluation and assessment scale; IESR, Impact of Event Scale-Revised; K10, Kessler psychological distress scale; MINI, Mini International Neuropsychiatric Interview; PANSS, positive and negative syndrome scale; PHQ 9, Patient Health Questionnaire; PDS, posttraumatic diagnostic scale; POMS, Profile of Mood States; QLDS, Quality of Life in Depression Scale; SWIRS, Satisfaction with Interpersonal Relationships Scale; SCAN, Schedules of Clinical Assessment in Neuropsychiatry; SRQ-20, Self-Reporting Questionnaire; SCID, Structured Clinical Interview for DSM-IV; WHODAS 2.0, WHO Disability Assessment Schedule; WHO-5, WHO-Five Well-Being Index; WHOQOL-BREF, WHO Quality of Life; CBT, cognitive behavioural therapy. +, benefit for intervention group; ++, benefit for intervention and control groups; *, no significant benefit; -, negative impact.*