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Responding to experienced and anticipated discrimination training for health professionals working in mental health services (READ-MH): an international multisite pre-post mixed methods feasibility study

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ABSTRACT

Background: Stigmatisation and discrimination towards people with mental health problems in low- and middle-income countries (LMICs) is pervasive. Health professionals working in mental health services can play a critical role in stigma reduction. This study examines the feasibility, costs, and potential effectiveness of READ-MH for such professionals in LMICs.

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[1] These authors have joint last authorship.

[2] Our valued Indigo colleague and friend, Dr Eshetu Girma, sadly passed away before the publication of this manuscript. Dr Girma led the Indigo-Ethiopia research team and the Ethiopia-based work that contributed to this publication. His career was dedicated to understanding and addressing mental health stigma in Ethiopia and standing in solidarity with people affected by mental health conditions. He will be missed, and his loss is keenly felt by colleagues in Ethiopia and across the Indigo consortium. May his soul rest in peace.

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Mental health care
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Health advocacy

Methods: This multisite, nonrandomized pre–post mixed-methods feasibility study was conducted across all seven INDIGO-Partnership program sites. The impact of READ-MH was assessed pre and immediately post training and at three months follow up on: knowledge of training content; attitudes to addressing stigma as a professional; and clinical skills pre and immediately post training using an Objective Structured Clinical Examination (OSCE) with a scenario concerning anticipated stigma. Qualitative interviews of trainees at three months explored the impact on their practice.

Results: Improvements in knowledge, attitudes, and clinical skills were reported. Mean knowledge scores increased immediately after training (+1.63; 95% CI 1.08–2.18) and were sustained at three months (+1.21; 95% CI 0.66–1.76). Increases were observed in the two attitudinal subscales i.e. role security (+1.28, 95% CI 0.82 to 1.74) and therapeutic commitment (+1.95, 95% CI 1.23 to 2.68) post-intervention, sustained at three months (+0.89, 95% CI 0.43 to 1.35) and +1.81; 95% CI 1.08 to 2.54). OSCEs total scores increased by 2.41 (+2.41, 95% CI 1.87–2.94). Qualitative data highlighted the training's relevance, advocacy orientation, and the importance of the experts by experience.

Conclusion: Findings across multiple LMIC contexts demonstrate feasibility, cultural adaptability, and sustained impact, supporting further evaluation of READ-MH.

1. Introduction

While all societal groups are impacted by mental health issues, people living in low- and middle-income countries (LMICs) countries remain disproportionately affected. Over 75% of adults who require mental healthcare do not receive any kind of evidence based medical intervention (Javed et al., 2021) despite 15 years of WHO investment in the Mental Health Gap Action Programme (mhGAP) (Brohan et al., 2024). In the context of growing social and economic inequalities, conflicts, humanitarian emergencies, climate change, public health emergencies and funding cuts, they face supply side barriers such as geographic inaccessibility, insufficient funding for mental health care and management, human resource shortages, incomplete integration of mental health in primary care systems, a lack of public health perspective, and a lack of service user and public involvement in service development. Demand side barriers include stigma associated with seeking or receiving treatment for mental health problems (Nadkarni et al., 2020).

Mental health professionals have a complex relationship with stigma, as they are simultaneously stigma sources (Schulze, 2007), stigma recipients (Gupta et al., 2024), and potential stigma reduction agents (Gunasekaran et al., 2022). They can engage in stigmatizing practices ways such as social distancing, using diagnostic terms in a perjorative way outside the clinical context, therapeutic pessimism regarding service users' ability to live a full life in the future, and diagnostic overshadowing through assuming physical health complaints are due to the mental health problem (Carrara et al., 2019). In a qualitative study, mental health service users reported behaviours of overprotectiveness and intrusiveness in decision-making by mental health professionals (Hamilton et al., 2016). Such attitudes and behaviours reinforce self-stigma and disempowerment and hinder service users' ability to pursue personal and interpersonal fulfilment (Wang et al., 2018). However, mental health professionals are also key to stigma reduction. They can be viewed as anti-stigma targets and advocates (Thornicroft et al., 2016; Lien et al., 2021). The role of a health advocate is defined as to "identify and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change" (Ed, 2005). From this perspective, research studies suggest that mental health professionals can contribute to decision-making and fundamental changes in healthcare systems to reduce interpersonal and structural levels discrimination (Meili et al., 2016).

The implementation of stigma reduction interventions remains sporadic and scarce, particularly in LMICs (Heim et al., 2018; Kaur et al., 2021; Thornicroft et al., 2016). Most intervention studies reported positive short-term outcomes regarding stigma reduction in the mental health field (Livingston et al., 2012; Nemec et al., 2015) with weaker evidence for medium and long-term effectiveness (Clay et al., 2020). Target populations varied widely and included medical and nursing students (Potts et al., 2022), social workers (Carrara et al., 2023), and primary healthcare providers (Al-Ma'ani and Hamdan-Mansour, 2020). A recent systematic review on the feasibility and effectiveness of training programs for mental health professionals regarding knowledge, skills, and attitudes towards addressing discrimination identified 39 studies, most of which were conducted in high-income countries (HICs) (Guerrero et al., 2024).

Consequently, it is challenging to apply findings from the existing evidence-base to LMICs, where service users may experience stigma differently depending on their culture, and professionals work in different service contexts (Mascayano et al., 2020). Interventions need therefore, to be based on a situational analysis, initial piloting, and meaningful inclusion of local people with lived experience of mental health conditions and stigma (experts by experience) (Knaak et al., 2014). Studies need to focus on service users' empowerment and use rigorous programme modelling and assessment (Guerrero et al., 2024).

In this context, we developed the Responding to Experienced and Anticipated Discrimination training for health professionals working in mental health services (READ-MH). READ-MH was developed based on an effective training for medical students (Potts et al., 2022), the findings of the above-mentioned systematic review (Guerrero et al., 2024), situational analyses at the seven sites of the INDIGO Partnership program (Gronholm et al., 2023), and a consensus development exercise among the INDIGO Partnership research team regarding the delivery format, content, and teaching methods based on data from the studies included in the review. We then conducted a multi-site feasibility study to assess the potential benefit, resource use and costs of the READ-MH training at the seven sites of the INDIGO-Partnership Research program, all located in LMICs (Henderson et al., 2022). The study outcomes provide policymakers, clinicians, and health care managers with crucial information to make informed decisions about implementing READ-MH.

2. Methods

2.1. Study design and setting

This was an international multisite non-randomized and uncontrolled pre-post mixed methods feasibility study, including seven sites across five LMICs (China (Beijing, Guangzhou), Ethiopia (Sodo), India (Bengaluru, Delhi National Capital Region), Nepal (Gandaki Province) and Tunisia (Tunis)). All sites were members of the UK Medical Research Council-funded INDIGO Partnership research group (Gronholm et al., 2023). The study took place between 2020 and 2023.

2.2. Participants

Eligible participants were mental health professionals or health professionals who did not have a formal training in mental health but were working in mental health services at the study site in patient-facing roles, in either a paid or voluntary capacity, and had completed

undergraduate education/training. We excluded health professionals who were known to be leaving the service in under three months, as they would not be present to complete the three month follow up quantitative assessment and qualitative interviews.

Recruitment methods were shaped by the local context. In Beijing the research team designed a recruitment poster and distributed it to the liaison officers of the district-level mental health institutions in Beijing. These liaison officers were then asked to forward it to all the doctors in the hospitals (through WeChat groups), asking if they were willing to participate. Those who agreed to participate would be required to sign up, with two places available per district. In Guangzhou the research team established a cooperative partnership with the Department of Rehabilitation at the Brain Hospital Affiliated to Guangzhou Medical University. On-site information sessions were held in the department to invite potential participants, who voluntarily signed up for the study. In New Delhi the team reached out to the District Mental Health Program (DMHP) team and personnel. The DMHP operates out of the district hospital, and the personnel are based in the hospital. A project coordinator visited the hospital and met the personnel informing them about the study and the time required for the READ-MH intervention. A convenient day and time were then finalized by making follow-up phone calls to each personnel. In Bengaluru, flyers were circulated in the institute through notice boards and social media. An email was also sent to the departments so that they could refer interested candidates for the training intervention. Based on the interests received through email (n = 34), the Bengaluru research team shortlisted an equal number of participants from each department for the final training program (n = 20) using purposive sampling to achieve a mix of different mental health professionals and prioritising participants who were fairly early in their training/residency program. In Tunis, an email was sent to residents of the eight departments of Adult Psychiatry at Razi University Hospital. Interested residents included were those with at least one year of professional experience in psychiatry. In Nepal, the medical colleges/hospitals in Pokhara were sent letters inviting them to participate in the training and to nominate psychiatrist residents, GPs, and psychiatric nurses. The medical colleges then provided names from their medical college/hospitals. A similar process was conducted in Sodo District, Ethiopia, except that Addis Ababa University issued an official invitation letter just to one hospital, Butajera Hospital, which nominated psychiatric nurses currently working at the facility to participate.

Written informed consent was obtained from every participant at the start of the first READ-MH session after distribution of Participant Information Sheet prior to the intervention. It was made clear to professionals by the research team and in the Participant Information Sheet that not taking part would not be penalized by the professional's supervisor. No financial compensation was given to attendees.

2.3. Ethics approval and consent to participate

Approval for this study was granted on 21 July 2020 by the King's College London Psychiatry, Nursing and Midwifery Research Ethics Subcommittee as a component of the International Study of Discrimination and Stigma Outcomes (INDIGO): Indigo Partnership Research Programme - Phase 2: Intervention Work Project Reference: HR-19/20-17252.

Site approvals were given as follows:

Delhi: The George Institute Ethics Committee, The George Institute for Global Health, 4 September 2020
Guangzhou: IRB, The Affiliated Brain Hospital of Guangzhou Medical 19 October 2020
Bengaluru: Institute ethics committee of National Institute of Mental Health and Neurosciences (NIMHANS) (ref: No. NIMHANS/26th IEC (BEH.SC.DIV.)/2020-21 dated 07/11/2020)
Ethiopia: Addis Ababa University College of Health Sciences IRB, 2 October 2019
Beijing: Ethics Committee of Peking University Sixth Hospital, 7 February 2021
Nepal: Nepal Health Research Council, 5 July 2021
Tunisia: Ethics Committee of Razi Psychiatric Hospital La Manouba, 11 January 2022: RPA 2/2022

2.4. Intervention

The aims of READ-MH were to increase the ability of professionals working in mental health care to: 1) Recognize their own stigma towards mental health service users and to minimise the effects on service users, carers, students, professional trainees and colleagues 2) Identify and respond constructively to service users' reports of experienced and anticipated discrimination and self-stigma during clinical consultations 3) Address interpersonal discrimination and foster advocacy at the individual, family and service levels. To achieve these aims, we worked to incorporate best practice for contact based education in terms of cultural adaptation, involvement of experts by experience, and interactive educational methods. Research team members from all sites participated in the development of the finalized version of READ-MH using a consensus development exercise in November 2020. The READ-MH manual was then drafted in 2021 (see https://indigo.group-org/resources/intervention-development-and-implementation/).

The training was divided into five modules. The manual described each module including content, objectives and teaching methods. The details of the READ-MH training are described in the corresponding protocol article (Henderson et al., 2022). A cultural adaptation matrix, the Ecological Validity Model, was applied to create site-specific content that is relevant to the socio-cultural context with specific examples of adaptation to each site (Daniel et al., 2024) (see Table 1).

Different delivery methods were combined such as group discussions, facilitated group discussions, role plays, and testimony from experts by experience. READ-MH training was provided by members of the research team as well as experts by experience. At each site, READ-MH was delivered over two half day sessions to allow for active participation and constructive group discussions in 2021-23.

Experts by experience were trained and supported by research team members on each site before giving their personal testimony based on previous work (Rai et al., 2018). Research team members were advised to refer to the manual for guidance on training and supporting the experts by experience, ground rules for mental health professionals' interaction with the experts by experience, and a safety protocol informed by the anti-stigma programme Time to Change England, in case the experts by experience required support during or after the delivery of READ-MH ("Time to Change Champions," 2014). The experts by experience components included a testimony on their experiences of mental health problems and recovery, personal examples of experienced stigma and discrimination in different settings, and their experiences with internalized and anticipated stigma and how they were overcome. These were provided during the first three modules respectively, on: introducing stigma and its effects on mental health care, experienced discrimination, and anticipated discrimination and internalized stigma.

2.5. Measures

2.5.1. Outcome measures

2.5.1.1. Knowledge quiz. A structured questionnaire was developed by the research team to assess knowledge and was based on the content of the training (see https://indigo.group-org/resources/intervention-development-and-implementation/). The quiz comprised 6 questions (4 multiple choice and 2 open-ended questions) with a total possible score of 18. The content, which aimed to be close to clinical practice, included (i) knowledge about sources of stigma, (ii) the impact of stigma, including in the context of health care, and (iii) how mental health

Table 1
Application of the Ecological Model to the READ-MH training content using the example of New Delhi.

Adaptation Dimension	Original Content	Pages/Location	Contextualization Strategy	Rationale	Evidence	Source
4. Content	READ manual draft for sites to tailor v2 and INDIGO READ WP6 MH professionals slides v19	READ manual draft for sites to tailor v2 (Page 10 and 15, Case vignettes 3.2.) INDIGO READ WP6 MH professionals adapted ppt slides (No. 19 and 38)	Case studies were adapted with changes in names, places and existing context of the district health system where patients with mental health conditions come for treatment.	This adaptation would assist mental health professionals to better understand the case examples relevant to their cultural and health system context so as to discuss these more meaningfully.	1. Kaur A, Kallakuri S, Mukherjee A, Wahid SS, Kohrt BA, Thornicroft G, Maulik PK. Mental health related stigma, service provision and utilization in Northern India: situational analysis. International Journal of Mental Health Systems. (2023) Dec; 17 (1):1-2. 2. WP2 evidence database on pcloud	INDIGO Partnership Pcloud, Situational analysis paper (DOI https://doi.org/10.1186/s13033-023-00577-8)

professionals can reduce this impact. Written scoring guidance was provided to each site.

2.5.1.2. Attitudes to addressing stigma and discrimination scale (ASTAD). The Attitudes to Addressing Stigma and discrimination scale (ASTAD) was developed to assess participants' attitudes towards addressing the impact of stigma on service users as part of their professional role (see https://indigo.group-org/resources/intervention-development-and-implementation/). The questionnaire consists of 10 items rated on a 5-point Likert scale (1 = fully agree to 5 = completely disagree). It was created by adapting the Short Alcohol and Alcohol Problems Perception Questionnaire (SAAPPQ) (Anderson and Clement, 1987). The original SAAPPQ evaluated health professionals' attitudes to working with people with alcohol problems. It had two items contributing to each of the five dimensions (role adequacy, role legitimacy, motivation, work satisfaction, and task-specific self-esteem) and two subscales: role security (the sum of role adequacy and role legitimacy) and therapeutic commitment (the sum of motivation, work satisfaction, and task-specific self-esteem). In the British validation study, the SAAPPQ showed a good correlation with the extent of postgraduate training in addiction (Anderson and Clement, 1987). In developing the ASTAD, the overall structure of the SAAPPQ was preserved, but the wording was adjusted to suit working to reduce stigma and discrimination instead of working with people with alcohol problems. Research team members at each site who are clinicians, and thus of the same professional background as the research participants, were consulted about the wording, to ensure its applicability. This resulted in the addition of the word 'discrimination' for use throughout in addition to 'stigma'.

2.5.1.3. Objective Structured Clinical Examination (OSCE). Behaviour and communication skills were assessed through an Objective Structured Clinical Examination (OSCE) (see https://indigo.group-org/resources/intervention-development-and-implementation//). Participants were asked to interact with a simulated patient in the presence of an examiner according to a pre-established scenario. This is a commonly used assessment method in medical education, including for the assessment of communication skills (Khan et al., 2013). The OSCE scenario for READ-MH included a simulated mental health service user who was faced with a disclosure decision regarding their mental illness in the context of marriage. It was developed through collaboration among the INDIGO Partnership-implementing sites to reflect typical interactions/problems of discrimination/stigma at the sites. The simulated patient, role played by members of the research team, reported anticipated stigma. Two versions were then created, one in which the simulated patient presented alone, and one in which the simulated patient was accompanied by a simulated relative. Site leads then chose the one that best reflected the norm at their site. The sites were also provided with instructions for the simulated patient (and relative where applicable) so that they would give standardized responses to participating professionals' questions, and marking scheme to increase reliability and comparability across sites. The marking scheme was that used for undergraduate medical school examinations at King's College London for OSCEs that assess communication skills. Descriptions are given for those criteria specific to the scenario and four overarching areas assessing the candidate as: competent, caring and sincere; a scholar, i.e. use of knowledge and reasoning; a competent and technically proficient practitioner; and a professional in terms of communication and attitude.

Participants were expected to acknowledge and explore the simulated patient's concerns, demonstrate empathy, and help the patient make an informed decision while taking into consideration various implications and outcomes and without instructing the patient either to disclose or not disclose.

The examiner had to assess the participant on 2 items: 1) professional's knowledge, reasoning, and technical proficiency and 2) communication skills on a 4-point scale (highly effective, somewhat effective, ineffective, and harmful). The simulated patient gave an overall assessment of the performance of the participant on the same 4-point scale, giving a total possible score of 12.

2.5.2. Process measures

The process evaluation covered implementation, mechanisms of action, and contextual influences, following the MRC guidance (Moore et al., 2015).

2.5.2.1. Implementation. Process measures on implementation included attendance records for participants across the two training sessions, and a fidelity checklist. The fidelity checklist covered expert by experience inclusion and instructors' compliance with the READ-MH training manual (see https://indigo.group-org/resources/intervention-development-and-implementation/). Eleven items on the instructor's attitude, module coverage, and training material were included to assess content delivery. Items on expert by experience presence, testimony, and engagement were chosen based on previous evidence on the value of social contact with people with lived experience of mental illness for an effective anti-stigma program for health care providers and trainees (Knaak et al., 2014). Each item in the checklist was scored 0 = not achieved, 1 = partially achieved, or 2 = achieved in full, with guidance for the anchor points. The total score out of a maximum possible 22 was calculated for each site.

2.5.2.2. Mechanisms of action and contextual influences. Focus groups were conducted by research staff with participants at each site to gather qualitative feedback on the training and its impact. The topic guide explored participants' views on the relevance and effectiveness of the training, highlighting successful parts and areas in need of improvement, as well as discussing obstacles and facilitators to putting the training into practice. Similar subjects were discussed at a 3-month follow-up individual interview with participants in addition to

perceived impact on their practice and, if applicable, their experiences of applying the training in practice.

All questionnaires as well as the topic guides for focus groups and individual interviews were translated and adapted to local language and to the context of each site.

2.5.2.3. Costing tool. A time-driven activity-based costing (TDABC) approach was employed to systematically collect data on several key components: participants' professional qualifications, a detailed description of the activities in which they engaged, the duration and frequency of these activities, and their corresponding hourly rates. In addition, data on fixed expenses were gathered, encompassing expenditure categories (e.g., capital, overheads, and materials), itemised descriptions of resources utilized within each category (such as LCDs, laptops, and travel), frequency and anticipated duration of use, as well as unit costs.

2.6. Study procedures

Before the first training session, participants undertook the OSCE evaluation followed by completion of the questionnaire-based assessment. The same outcome measures were repeated immediately post-training. Only the knowledge quiz and the ASTAD were completed once more at the three-month follow-up.

Attendance was recorded for each session. The fidelity checklist was filled out immediately post training by a member of the research team. The costing tools were completed by researchers at the local sites.

Focus groups and interviews were audio-recorded and transcribed verbatim by members of the research site teams.

2.7. Data analysis

Descriptive statistics were calculated for all quantitative outcomes, including OSCE scores, ASTAD scores, and knowledge quiz results. Distributions were examined visually and numerically to assess normality and identify potential floor or ceiling effects. Internal consistency reliability was assessed where appropriate. Cronbach's alpha coefficients were calculated for multi-item scales (i.e. ASTAD, 0.78). Reliability was not estimated for the knowledge quiz where items were scored independently. To evaluate the impact of the training, outcomes measured at post-training and three months post-training were compared with baseline using random-intercept linear regression models to account for clustering of repeated observations within sites. Time was modelled as a categorical variable (baseline, post-training, three months) to allow for non-linear changes over follow-up. Site-level heterogeneity was assessed through variance components and intraclass correlation coefficients (ICCs), and by examining site-specific random effects. Site-level means were also computed and are presented descriptively in Supplementary Table 1. Missing data were examined for patterns and extent. Analyses were conducted under a missing-at-random assumption using mixed-effects models, which allow inclusion of all available observations without case-wise deletion. Focus group and individual interview analysis used a deductive approach based on the topic guide. Consistency of deductive coding was ensured through use of topic guide questions to structure the coding. To build a coding framework in English based on data from all sites, research staff at data collection sites who were fluent in both the transcript's language and English coded and translated illustrative accounts, from which representative quotations were selected to support key themes.

For costing the intervention, the Purchasing Power Parity was used to convert the local currencies to US dollars. When unit costs were not provided, we used the literature to obtain country and site-specific costs. We allowed for depreciation rate in estimating the yearly financial values of equipment used in delivering the intervention.

3. Results

3.1. Participant demographic and professional data

Five sites delivered the training once while two did so twice. Of 112 professionals who took part in one or both sessions, 110 provided baseline questionnaire measures while 108 and 106 provided immediate post and 3 month follow up data respectively and 106 and 103 did the baseline and post intervention OSCE.

Participant demographic and professional data are summarised in Table 2. The study sample was comprised of a higher proportion of females (64.9%) and consisted mainly of medical professionals such as psychiatry residents and psychiatrists (73.9 %). Over three-quarters (77.1%) of the participating healthcare professionals had no prior

Table 2
Characteristics of all participants (complete data available for n = 107).

		N	n (%)	Mean (SD)
Site	Beijing	107	12	
	Bengaluru		18	
	Delhi NCR		5	
	Ethiopia		9	
	Guangzhou		14	
	Nepal		9	
	Tunisia		40	
Gender		111		
	Male		39 (35.14%)	
	Female		72 (64.86%)	
Age (years)		111		31.6 [23-52]
Profession		108		
	Psychiatry residents		45 (40.54%)	
	Psychiatrists		37 (33.33%)	
	Nurses		7 (6.3%)	
	Clinical psychologists		4 (3.6%)	
	Other (Rehabilitation therapists, social workers, PHD scholars, research associates		15 (13.51%)	
Clinical practice post-qualification (year)		112		6.1 [0.5 – 30]
Clinical practice in mental health (year)		112		5.2 [0.2-30]
Choosing to work in mental health		101		
	Yes		93 (92.08%)	
	No		8 (7.92%)	
Closest person living with mental illness[a]		105		
	Self		2 (1.90%)	
	Spouse/partner		9 (8.57%)	
	Family member		31 (29.52%)	
	Friend		16 (15.24%)	
	Coworker		14 (13.33%)	
	Neighbour		5 (4.76%)	
	Other		28 (26.67%)	
Stigma program (knowing of any mental health stigma reduction programs)		109		
	Yes		25 (22.94%)	
	No		84 (77.06%)	

[a] The option 'No one' was not offered due to the participants' employment in mental health services.

knowledge of any mental health anti-stigma programme.

3.2. Quantitative assessment

3.2.1. Knowledge quiz

The mean score for participants was 1.63 (95% CI 1.08 to 2.18) ($P < 0.001$) points higher on the knowledge quiz immediately post-training compared to pre-training, indicating greater knowledge regarding mental illness stigma and discrimination. Similarly, at the 3-month follow-up, participants scored on average 1.21 (95% CI 0.66 to 1.76) ($P < 0.001$) points higher compared to pre-training, highlighting the sustainability of the intervention's positive association with knowledge (Fig. 1).

3.2.2. Attitudes to addressing stigma and discrimination scale (ASTAD)

The mean post-intervention difference in scores for role security was 1.28 higher compared to pre-intervention (mean difference 1.28, 95% CI 0.82 to 1.74, $P < 0.0001$); likewise the 3 month follow up score as compared to baseline (mean difference: 0.89, 95% CI 0.43 to 1.35, $P < 0.001$) (Fig. 2). Similarly, the average score for therapeutic commitment showed an immediate post-training increase higher compared to pre-training (mean difference 1.95, 95% CI 1.23 to 2.68, $P < 0.001$), which was also sustained at the 3-month follow-up (mean difference: 1.81, 95% CI 1.08 to 2.54, $P < 0.001$).

3.2.3. Objective Structured Clinical Examination (OSCE)

The results showed statistically significant overall improvements in OSCE performance, as participants scored on average 2.41 points (95% CI 1.87 to 2.94) ($P < 0.000$) higher on OSCE total scores than at baseline (Fig. 3). The mean change in knowledge, reasoning, and technical proficiency scores indicates that, on average, participants scored 0.85 points (95% CI 0.56 to 1.10) ($P < 0.000$) higher on this OSCE domain after completing the training. Effect sizes of the improvements in the communication and empathy score (mean change 0.74 (95% CI 0.50 to 1.10) ($P < 0.000$)) and the overall performance score given by the simulated patient (mean change 0.81 (95% CI 0.52 to 1.06) ($P < 0.000$)) were slightly smaller but still statistically significant.

No ceiling effects were observed for any measures.

3.3. Implementation assessment

3.3.1. Attendance record

At the Bengaluru site, two participants did not attend the second session. In all the other sites, all participants attended both sessions.

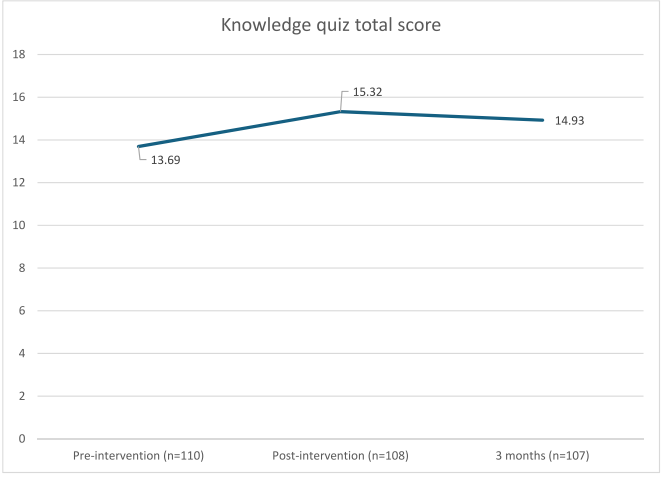

Fig. 1. Knowledge Quiz mean total scores at each time point.

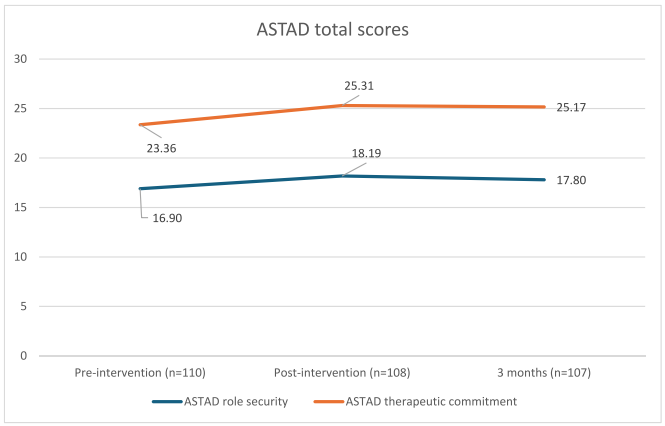

Fig. 2. ASTAD mean total scores at each time point.

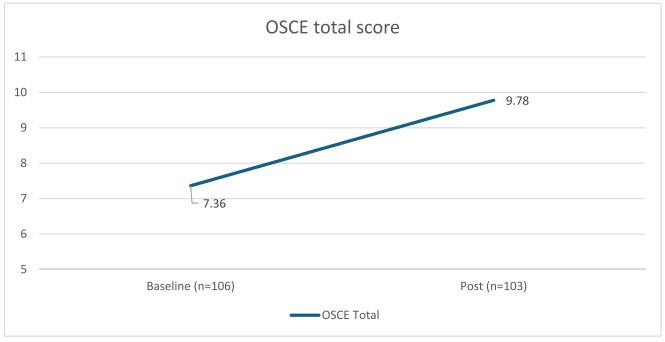

Fig. 3. OSCE total score at each time point.

3.3.2. Fidelity checklist

Mean scores on the fidelity checklist varied from 17.33 to 21 out of 22.

3.3.3. Intervention cost

The mean number of participants in the READ intervention across the seven sites was 32, with a standard deviation of 17.21. The data range extended from 6 participants in Bengaluru to 53in Tunisia, reflecting some variation in participation levels. The mean cost per participant was $455.34 (SD = $481.06), ranging from $96.10 in Tunis to $1427.57 in Beijing.

Fixed costs per participant was smallest at Tunisia ($18.5), with Guangzhou, Delhi, Ethiopia and Nepal costing around $65 per participant. Beijing and Bengaluru recorded the highest costs per participant. Analysing the distribution of fixed costs per site and cost categories (capital, materials, overheads, and travel), Beijing showed particularly large expenditures in overheads and materials, while Bengaluru recorded substantial costs in materials, overheads, and travel.

Similar findings are observed when analysing the distribution of time-related costs per study site. Costs per participant demonstrated pronounced variability, with an average cost of $318.9 and a high standard deviation of $431. Costs ranged from a minimum of $67 in Delhi to a maximum of $1245 in Beijing, reflecting an almost twenty-fold difference between the lowest- and highest-cost sites. Beijing represented a clear high-cost outlier, while Guangzhou ($459) also exceeded the overall mean. In contrast, Bengaluru ($185.8), Ethiopia ($124), Nepal ($73), and Tunis ($77.7) were associated with comparatively lower per-participant costs.

3.4. Qualitative assessment

Nine focus groups were held straight after the training covering all

sites, with 4-20 participants per site based on the size of the group trained and a total sample of 95. Two individual interviews were also conducted at the Beijing site. At three months follow up, four focus groups for 4-20 participants were held across Beijing, Tunis and Ethiopia (total n = 55) and 39 individual interviews were conducted across Nepal, Beijing, Bengaluru, Delhi NCR, and Guangzhou (range 4-14 per site). Four main themes were identified: experience of the course as a whole; the involvement of an expert by experience; the impact of the course on how professionals conceive of their professional role; and the impact on their practice.

3.4.1. Training topic, format, and content

The course content was perceived as informative and beneficial in enhancing understanding of mental illness stigma and discrimination. Participants primarily mentioned how engaging the training was and how it covered all essential topics. They highlighted the fact that they learned about various types of stigma and how often they were not aware of their stigmatizing behaviours and attitudes. Participants valued the interactive teaching methods, such as role-playing and expert testimonies, for their practicality and relevance to real-world scenarios.

> *"The format of this training was good, with a few participants, detail-oriented communication, and role play in addition to listening to lectures. There was a high level of participation from everyone."* Beijing

> *"I got to learn many things about stigma and different types of stigmas. We used to think that stigma is related to stereotypes. But here we learnt what are the different types of stigmas and how people perceive themselves. So I got to learn these things."* Delhi

> *"We can see this training in two angles. The first one is for the new workers; it helps them to gain knowledge, and for the existing professionals, it refreshes their knowledge on the area of stigma and mental health problems. Specifically, it addresses the major mental health services problems. The way of its presentation is very organized. On top of that, it was participatory, in which it was possible to share positive points. And it was open for the free sharing of different views, and it was constructive kind of training."* Ethiopia

One criticism was a lack of more specific information about stigma in their care setting:

> *"If how much professional or institutional stigmatize exist in Ethiopian health facilities mentioned it would be more expressive."* Ethiopia

Another was the tight schedule which did not always allow enough time for reflection and discussion:

> *But once it was over and then I was on the way back, I felt my whole head was going to explode. I just feel that the content is actually quite a lot, but the time is rather tight*." Beijing

3.4.2. Experts by experience involvement

The involvement of experts by experience was deemed crucial given that their active contribution highlighted a different side to people with mental health conditions and the extent of stigma they experience. Participants generally believed that this part of the training provided valuable and authentic firsthand experiences and fostered empathy towards individuals living with a mental illness. Their testimonies additionally expressed a sense of hope to the trainees after hearing about service users' recovery stories. Participants reported that the physical presence of the expert by experience was more effective than videos, as service users were directly explaining their struggles with stigma, which enabled constructive exchanges with participants and enhanced the vividness and educational effectiveness of the training.

> *"During the presentation session, you also brought people who were affected by social stigma. We could see and hear the experiences of the people and how they were affected by social stigma. We found that to be stronger than the presentation itself as people were sharing their firsthand experience. I felt I was living the same experience as them through their words. I could feel social stigma is a social reality."* Nepal

> *"What I appreciated were the testimonials, because usually when you see a patient in a session, it's completely different from hearing someone who isn't your patient sharing a story. I found that I'm more empathetic with patients who provided testimonials."* Tunisia

However, participants also expressed the need for careful implementation to ensure respect for service users' privacy and well-being, particularly at both sites in China.

> *" I think there was not enough privacy protection"* Beijing

3.4.3. Course effect: professional role

Participants reported feeling more confident and motivated after gaining additional skills to reduce the stigma related to mental health. The training prompted them to re-examine their work roles and professional missions, particularly in the fields of mental health rehabilitation and social work, where they became more aware of their responsibilities and commitments to service users regarding stigma related to mental health.

> *"we can promote community awareness as a result of what we have observed and learned."* Ethiopia

Trainees particularly highlighted the expansion of their professional role to include advocacy for mental health. Some reported a better capacity to act as anti-stigma agents by taking more initiative to raise awareness in the workplace through discussions with colleagues and implementing change.

> *"I became aware during this training that we have a role. We are not just therapists; we also have a role towards patients in raising societal awareness. This includes starting by sensitizing the people around us."* Tunisia

3.4.4. Course effect: practice

Participants expressed increased confidence in addressing stigma and discrimination in their daily practice, with a focus on service users' empowerment and holistic care. The training bolstered the self-awareness of mental health professionals, enabling them to recognize potentially discriminatory behaviours they might inadvertently engage in during their work and encouraging them to make the necessary adjustments.

> *"In some aspects, I myself used to show some sorts of discriminatory behaviour … After the training, I have realized that I should not have shown those sorts of behaviour in the past. Now I feel I will not repeat these behaviours, and I will also tell other people not to show these sorts of behaviour."* Nepal

They also mentioned an increased ability to recognize, validate, and respond to various forms of stigma by acknowledging service users' experiences and demonstrating empathy.

> *Family can also see the differences between the service provided by the hospitals before and now. We also make family members aware by telling them information related to stigma and discrimination. We tell them not to use derogative words like lunatic, crazy (baula, pagal and this). We tell them it's not the patient's fault to be in the situation like that and the patient will be cured through the treatment"* Nepal

Moreover, individuals emphasized the training's ability to inspire medical staff to take a more proactive approach to service users' needs in the recovery phase and to provide the needed resources while respecting their right to make their own decisions.

"If somebody with cancer comes to you with some other kind of physical complaint, you would not ignore that just because the person has cancer. Similarly, for a person who has a mental illness, you cannot just rule out any other thing based on the existence of a mental illness. So now I spare at least 5 to 7 minutes to explain the person in position. I don't know whether it is creating any impact on their beliefs, but at least I am sparing 5 minutes, which I did not do before." Bengaluru

However, participants flagged the constraints on their time to enquire about or address the impact of stigma, and the uncertainty about the outcome of doing so in a one-off consultation:

"I remember one patient similar to like that pre and post role play [OSCE] … a lady about 30 and her father was there with her. She wanted to disclose everything to the in-laws before marriage, but he didn't want … I couldn't talk for a long time but for like 5 minutes … Before the interview he was zero percent convinced to share the details (which daughter wanted) but after the interview I felt that maybe he was fifty percent convinced to share the details. Not sure what has happened after as I have not seen them after that." Bengaluru

4. Discussion

In this international multisite study, the anti-stigma training of mental health professionals was associated with positive changes in knowledge, attitudes, and skills. The quantitative and qualitative results are fairly consistent in that changes in practice were reported at the three month point in terms of interactions with service users, families and other professionals. The intervention appeared to be feasible, acceptable and to have been delivered with good fidelity. The main reason for variation between sites was the involvement of experts by experience. Not all were able to have one attend in person at every session, such that some had to use filmed testimonies. Views on their inclusion for face-to-face training also varied, with participants at both sites in China expressing concern about their privacy and potential impact on their wellbeing. Although the intervention was tailored to each site, there were indications that further adaptations may be needed. First, the provision of more site-specific data on the impact of stigma would make the training more locally relevant. Second, more time may be needed at some sites where the content felt new and of a large amount, creating a sense of overwhelm.

4.1. Comparison with previous studies

Our findings align with previous research on the positive role of contact-based educational interventions in enhancing attitudes toward mental health (Thornicroft et al., 2022). Until recently there were few such interventions targeted at mental health professionals, however there now exists the Quality Rights initiative, a program launched by the World Health Organization in 2013 to promote human rights, legal capacity, recovery-oriented care, and the elimination of coercion in mental health consistent with the Convention on the Rights of Persons with Disabilities (CRPD) (Funk and Bold, 2020). It includes tools for service audits, policy reform, and a training program targeting a diverse range of stakeholders—including mental health workers, service users, caregivers, policymakers, social workers, professional associations and academic institutions. To promote accessibility, WHO has expanded its face-to-face training by launching the Quality Rights e-training platform ("QR e-training," n. d.) in 2022.

Quality Rights training has positively changed attitudes towards human rights in the mental health field, as shown by studies in Iceland (Morrissey, 2020), India (Pathare et al., 2021), and Ghana (Poynton-Smith et al., 2023). However, the content has a limited focus on skill-building and behavioural changes (Funk and Bold, 2020; Gill et al., 2024). Moreover, most evaluations rely on self-reported scales or surveys, which limits the objective assessment of the impact on practices and sustainability (Morrissey, 2020; Pathare et al., 2021). Likewise, our review (Guerrero et al., 2024) found no studies designed to promote and evaluate skill-building for mental health professionals to reduce stigma and discrimination in LMICs.

In our study, participants considered the inclusion of an expert by experience as the highlight of the intervention with a significant impact on their perception of stigma and discrimination related to mental health. While this is consistent with the literature on stigma reduction interventions for other target groups, it is nonetheless notable given the clinical contact health professionals have and points to the importance of considering the individual rather than focusing largely on the illness and any associated risks (Schulze, 2007).

4.2. Strengths and limitations

This research has a number of strengths. It was conducted across five LMICs. While prior single-site studies specifically tailored for mental health professionals have been carried out in middle-income countries (Li et al., 2019), the focus in low-income countries has mainly been limited to primary care settings and medical and nursing students (Wainberg et al., 2017), By employing a multi-site approach and engaging participants from various cultural backgrounds, we enhanced the generalizability of the findings. Despite the input into the training from multiple sites, it was specifically tailored beforehand to each site by incorporating culturally sensitive and locally relevant content that was derived from situational analyses.

Most stigma interventions in mental health have been designed to assess participants' attitudes and knowledge exclusively. Our study utilized OSCEs—a well-established assessment tool in medical education (Khan et al., 2013) to evaluate participants' clinical skills in managing anticipated and experienced discrimination towards people with mental health problems. This provided a fuller understanding of the intervention's impact.

Although the evaluation of READ-MH offers encouraging preliminary evidence, we acknowledge several caveats.

Because the project used a single-group, pre–post approach, the observed improvements cannot be unambiguously linked to the intervention itself. Changes may partly reflect repeated testing, participants' awareness of being observed, or broader contextual influences. More rigorous experimental or quasi-experimental trials will be essential to demonstrate causal effects.

The instruments employed to assess knowledge, attitudes, and behaviour were partly adapted or developed locally. While this enhances contextual relevance, it also introduces uncertainty about their reliability and validity across cultural settings. While clinical researchers as mental health professionals reviewed all the measures and inputted into them at each site, there was no capacity for piloting them before their application. Consequently, the brief knowledge quiz was not psychometrically standardized, and the adapted ASTAD requires further validation work. Ratings in the OSCEs may also have varied depending on examiner interpretation, given the lack of reported inter-rater reliability data. However, the use of these measures avoids that of measures not designed for this target group, which has been criticised in a recent systematic review of stigma reduction interventions for healthcare students and professionals (Wong et al., 2024).

The study drew primarily on health workers from urban or semi-urban services. The findings may not extend to providers in rural or community-based facilities, or to informal practitioners, where stigma dynamics can differ markedly. Where nominations were sought from medical colleges and hospitals such as in Ethiopia and Nepal, those selected may not have been representative of the workforce in that they were preferred and/or available. Further, the sample sizes varied across sites, due to several reasons including differential impacts of covid and the different settings in which site leads work.

Outcomes were only assessed up to three months after training. As stigma and discriminatory behaviours often persist over time and may

resurface without reinforcement, longer follow up is important (Guerrero et al., 2024). A longer follow-up period was planned to provide more insights into the training's long-term effectiveness, but delays due to the covid-19 pandemic prevented this.

The costing exercise depended largely on retrospective recall and self-reports from facilitators. Differences across sites suggested local drivers—such as trainer fees or venue costs—that were not systematically analysed. As a result, the generalizability of the cost estimates is limited but highlights drivers for those considering implementation elsewhere.

The qualitative component added valuable depth, but the point of thematic saturation was not clearly established as the sample sizes were limited by the numbers of those attending the training. Moreover, power dynamics, particularly where experts by experience reflected on their involvement, may have shaped how openly views were expressed. Likewise, social desirability bias may have influenced the qualitative feedback and quantitative measure completion. This is more of a risk for those at some sites who were still in training (Tunis) rather than clinicians with many years' experience, and those sites at which there was a pre-existing relationship with one or more participants (New Delhi).

4.3. Implications for future research, policy and practice

Our results suggest that READ-MH is effective in improving mental illness stigma-related knowledge, attitudes, and skills among mental health professionals. Further research is essential to substantiate these findings. Conducting a rigorous randomised controlled trial with a control group would provide more robust evidence of its effectiveness.

A notable component of our study is the chosen scenario for the OSCE, centred on the disclosure of a mental health condition by a simulated mental health service user. This scenario embodies a critical and common concern for mental health service users and is often brought up in their interactions with healthcare providers (Brohan et al., 2012). Future research could consider extending the longitudinal assessment of skills retention and application including the OSCE to assess the intervention's durable impact on professionals' practices in real-world settings.

To the best of our knowledge, stigma related to mental illness is not part of the mandatory training programs for mental health professionals in many low- and middle-income countries (LMICs), leaving a significant gap in their professional development. Addressing this gap through integration of READ-MH into standard training curricula could enhance professionals' ability to address stigma-related issues and standardise stigma reduction as a core competency. READ-MH could nicely supplement the QualityRights training on human rights and legal capacity for people with mental health conditions by translating these principles into clinical skills for mental health professionals through its interactive training and emphasis on the role of experts by experience. Routine implementation of READ-MH would be facilitated by delivery by respected local trainers. To help embed in person involvement of experts by experience in keeping with participant preferences, policymakers in LMICs should explore structural approaches to institutionalizing expert by experience participation (e.g., through peer workforce development via national policy guidelines) rather than relying on ad-hoc involvement. A critical aspect of incorporating expert by experience contributions to training is the provision of safeguards for their privacy and wellbeing and ensuring that they benefit from the experience. Regarding privacy, experts by experience must be given accurate and detailed information regarding each and every training session about the composition of those they are being asked to train, so that they can decide whether to do so and if so what they wish to share. Their wellbeing can be maintained in several ways. First, training must be provided so that they can consider and rehearse what they want to share and if possible attend as an observer the training to which they are being invited to contribute. Second, at each training those being trained must be instructed as to the scope of any questions that the expert is willing to respond; for example, information identifying family members should not be requested. Third, support from mental health professionals must be available at any time, and peer support and/or mentoring should be made available by maintaining a cadre of experts by experience. Fourth, reward and recognition for their contribution must be provided. Fifth, supervision should cover discussion about whether and how the expert by experience wishes to pursue opportunities for personal development or additional roles available within or beyond the organisation. While the current version of READ-MH could operate as a foundational and interprofessional training program, its content could be adapted to other settings such as forensic, child and adolescent, or specialist mental health care settings and to the needs of different professional groups.

Further research with a longer follow-up could examine whether READ-MH can empower professionals to serve as mental health advocates, ultimately creating change at the group and systemic levels. However, support for advocacy as a key role for mental health professionals (Alem et al., 2010) is needed from professional regulatory bodies and training programme leaders, as for example in Ethiopia. Future studies could ultimately test whether embedding READ-MH with institutional support can improve clinical, functional, and personal recovery outcomes for people living with mental health problems.

CRediT authorship contribution statement

Hend Jemli: Writing – original draft, Investigation, Formal analysis. **Bethel Ayele:** Writing – review & editing, Investigation, Formal analysis. **Ioannis Bakolis:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Formal analysis. **Kalpana Bhattarai:** Writing – review & editing, Investigation, Formal analysis. **Elaine Brohan:** Writing – review & editing, Formal analysis. **Anish Cherian:** Writing – review & editing, Supervision, Investigation, Funding acquisition. **Mercian Daniel:** Writing – review & editing, Investigation, Formal analysis. **Eshetu Girma:** Writing – review & editing, Supervision, Investigation, Funding acquisition. **Petra C. Gronholm:** Writing – review & editing, Supervision, Project administration. **Dristy Gurung:** Writing – review & editing, Supervision, Investigation, Formal analysis. **Ariam Hailemariam:** Writing – review & editing, Investigation, Formal analysis. **Charlotte Hanlon:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization. **Sudha Kallakuri:** Writing – review & editing, Investigation. **Amanpreet Kaur:** Writing – review & editing, Investigation. **Bezawit Ketema:** Writing – review & editing, Investigation. **Heidi Lempp:** Writing – review & editing, Funding acquisition. **Jie Li:** Writing – review & editing, Supervision, Funding acquisition. **Santosh Loganathan:** Writing – review & editing, Supervision, Funding acquisition. **Pallab K. Maulik:** Writing – review & editing, Supervision, Funding acquisition. **Gurucharan Mendon:** Writing – review & editing, Investigation, Formal analysis. **Amani Metsahel:** Writing – review & editing, Investigation, Formal analysis. **Tesfahun Mulatu:** Writing – review & editing, Investigation, Formal analysis. **Yurong Ma:** Writing – review & editing, Investigation, Formal analysis. **Ning Ma:** Writing – review & editing, Supervision, Funding acquisition. **Bhawana Subedi:** Writing – review & editing, Investigation, Formal analysis. **Nahel Yaziji:** Writing – review & editing, Methodology, Formal analysis. **Yosra Zgueb:** Writing – review & editing, Investigation, Formal analysis. **Wufang Zhang:** Writing – review & editing, Investigation, Formal analysis. **Graham Thornicroft:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization. **Uta Ouali:** Writing – review & editing, Supervision, Resources, Funding acquisition, Conceptualization. **Claire Henderson:** Writing – review & editing, Supervision, Resources, Methodology, Funding acquisition, Conceptualization.

Availability of data and materials

The dataset resulting from this project will be available in de-identified format on reasonable request to the first author. The

manual and measures will also be available in due course via indigo-group.org.

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Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: G Thornicroft, E Girma, D Gurung, C Hanlon, A Cherian, J Li, S. Loganathan, N Ma, P.K. Maulik, Uta Ouali C Henderson reports financial support was provided by UK Research and Innovation Medical Research Council. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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