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Mental health interventions in schools in low-income and middle-income countries

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This is the second in a *Series* of two papers about mental health interventions in schools

See Online for a podcast on mental health care in schools

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Increasing enrolment rates could place schools in a crucial position to support mental health in low-income and middle-income countries. In this Review, we provide evidence for mental health interventions in schools in accordance with a public mental health approach spanning promotion, prevention, and treatment. We identified a systematic review for mental health promotion, and identified further prevention and treatment studies. Present evidence supports schools as places for promotion of positive aspects of mental health using a whole-school approach. Knowledge of effectiveness of prevention and treatment interventions is more widely available for conflict-affected children and adolescents. More evidence is needed to identify the many elements likely to be associated with effective prevention and treatment for children exposed to a range of adversity and types of mental disorders. Dissemination and implementation science is crucial to establish how proven effective interventions could be scaled up and implemented in schools.

Introduction

Schools provide an important context in which to consider the needs and development of children worldwide. In low-income and middle-income countries (LMICs), schools represent many different educational approaches, institutions, and opportunities, with marked variation in size, accessibility, and capacity. All children and adolescents, however, will have broadly similar basic needs from their schools—to be places in which their academic, physical, emotional, social, and moral development can be safely nurtured and progressed. In this Review, we first describe the importance of focusing on school-aged children and adolescents in LMICs, and why schools are potentially important institutions in the development of mental health services worldwide. We aimed to describe mental health interventions taking place in LMIC schools and to draw any conclusions available from the present evidence on what works in which schools and for which populations, and how these interventions might be delivered. We reviewed mental health interventions that have been assessed in LMICs using the Institute of Medicine (IOM) framework,¹ which we also used in our accompanying Review² for high-income countries (HICs). The IOM framework differentiates between interventions that promote positive aspects of mental health and those that address prevention and treatment of mental disorders. Some interventions span mental health promotion, prevention, and treatment. We were able to draw on a key systematic review³ of mental health promotion interventions in LMICs, but because no similar reviews exist for prevention and treatment interventions, we did a limited systematic review of these interventions to ensure the main categories of interventions were included in the Review.

School-aged children in LMICs

More than 80% of the world's population of children and adolescents live in LMICs at present.⁴ These children

and adolescents also represent a proportionately larger section of the population in their respective countries than in HICs. Yet, resources to adequately educate and train these young people are insufficient.⁵ Universal primary education by 2015 is one of the key Millennium Development Goals; however, 9% of all primary school children are out of school worldwide.⁶ In 2012, this number amounted to 58 million children, of whom more than half were living in sub-Saharan Africa. More girls than boys are out of school, and children and adolescents in LMICs attend schools with larger class sizes and typically receive a poorer quality of education than do their high-income counterparts.^{7,8} Findings from studies in HICs show the relation between poor mental health and educational difficulties, emphasising the importance of addressing mental health in school.² Additionally, many adolescents in LMICs feel great pressures to follow an accelerated path into adulthood, with increased social and economic responsibilities, leading to early formal and informal employment, thus limiting higher education prospects.^{5,8}

Schools are found throughout the rural and urban landscape of most LMICs, and, as shown by figures from the UN Educational, Scientific, and Cultural Organization,⁶ overall rates of school attendance have substantially improved since 2000. This increase is in stark contrast to child and adolescent mental health provision. The so-called mental health gap—a term that emphasises the many unmet mental health needs worldwide—is particularly pronounced for children and adolescents.^{9,10} Widespread absence of prioritisation in services is compounded by poor training and stigma, limiting the uptake and effectiveness of what mental health services are available for children, their parents and families, and their teachers.¹⁰ Schools therefore provide a potential location to address the mental health needs of their enrolled children because they have

shown, in some places, how they can offer a scalable platform to access high numbers of children and adolescents, exemplified by improvements that have been made to school attendance rates (although gathering of relevant metrics across countries needs a consistent approach).¹¹ The prospect exists, through schools, for health services to work in collaboration with the education system.¹² Schools can offer opportunities and classes within the school structure to improve and promote mental health, and a place to potentially prevent development of more serious mental disorders. The capacity to manage any additional child needs within the LMIC school context will need to address the potential burden on school staff who have few opportunities for professional development in the face of the challenges of teaching in low-resource contexts. This absence of development might, for example, make teachers less equipped to manage the emotional and behavioural difficulties presenting in their classrooms unless properly supported and could signal the need for non-teaching professionals to deliver mental health interventions within schools.¹³

Mental health problems affect 10–20% of children and adolescents worldwide and account for a large portion of the worldwide burden of disease.⁹ Compared with their high-income counterparts, children in LMICs are likely to have some broad differences in risk exposures and protective factors for psychological difficulties.¹⁰ A high number of children in LMICs face various risks throughout their lifecycle, such as absence of caregivers,^{14–16} problems with physical health and nutritional status, and deficiencies in the psychosocial and educational environment.⁹ Additionally, armed conflicts and chronic poverty disproportionately affect children in LMICs. Fewer systems are in place in LMICs than HICs to support the increasing number of children who are surviving with physical disabilities^{17–19} and neurodevelopmental disorders, including autism spectrum and learning disorders, many of whom might have additional difficulties in school. Furthermore, data suggest that bullying in school is widespread across many LMICs.^{18,20,21} With regard to protective factors, resilience (ie, retained mental health and positive development in the context of substantial adversity) has received increasing attention from researchers and practitioners. Unfortunately, this interest has not yet translated into a strong body of knowledge about protective factors for children in LMICs, even though they represent most of the world's children and are confronted with the largest share of worldwide adversity. Present research seems to suggest that resilience is not an intrinsic strength, but a complex biopsychosocial process, with determinants at individual, family, peer, and community levels.^{22,23} For example, in their systematic review of resilience and mental health in children affected by armed conflict in LMICs, Tol and colleagues²² noted variation in protective factors across sex, age, phase of conflict, and sociocultural setting.

Practitioners and researchers interested in mental health in the school setting might be informed by other initiatives in public health. Public health interventions with an aim to reduce risky behaviours have been done across many different LMICs. These interventions have shown that schools, as part of an integrated strategy across health and education sectors, can be an important conduit for successful interventions. Mental health interventions can potentially benefit from examples of interventions for communicable diseases such as HIV/AIDS^{24–28} and the prevention of risk factors associated with non-communicable diseases, such as obesity^{29,30} and tobacco, alcohol, and substance misuse,^{31–33} although this trend should be cautiously interpreted because findings from many studies^{34,35} have shown only short-term effects. Many different models of interventions have been used, including not only school-based interventions for either the whole school, classrooms, selected groups of children, or individuals alone, but also a range of broad and innovative designs with potentially promising findings. These models have used peer^{36,37} and community-based³⁸ partners, the internet,^{39,40} cash incentives,⁴¹ and extra-curricular activities.⁴²

Mental health interventions in schools

Mental health promotion

Mental health promotion interventions promote wellbeing broadly and aim to strengthen positive aspects of mental health. According to the IOM framework,¹ promotion of positive aspects of mental health is crucial in its own right, as well as helpful for prevention of the onset of mental health problems.

Panel 1: School HeAlth Promotion and Empowerment (SHAPE) programme

The SHAPE programme was developed by an Indian non-governmental organisation (Sangath, Goa, India) and built on the health-promoting school framework and an earlier health promotion study⁴⁹ in schools using teachers and peers. This study extended the learning from the original studies⁵⁰ and addressed resource considerations by enabling training of lay school health counsellors (not teachers) to conduct the interventions, which incorporated both physical and mental health promotion aspects. The programme included skilled supervision of counsellors, which diminished over time as the counsellors' skills improved. Whole-school interventions for violence and bullying were also incorporated. This programme showed that school health promotion could be successfully delegated to lay school counsellors and that, over time, children were able to learn what school counselling could offer and would appropriately self-refer to the service. Supportive school management was an important factor in the success of the programme, and its reach increased with successive years. This intervention is being assessed in a randomised controlled trial in northern India at present.⁵¹

Panel 2: Example of UNICEF practice

In both emergencies and development contexts, UNICEF provides psychosocial support through schools and in community settings. Schools provide a potentially safe and stable environment for learners and can restore a sense of normality, dignity, and hope by offering structured and supportive activities. Mental health and psychosocial support in emergencies is mainly provided through child-friendly spaces and, in education, through temporary learning spaces and child-friendly schools. UNICEF advocacy efforts with governments have led, in the past decade, to 51 additional countries adopting quality standards based on child-friendly schools, raising the total number of countries with such standards to 94 in 2013.⁵³ Nearly 790 000 schools are applying child-friendly school standards at present. While mental health and psychosocial support is a crucial emergency response for UNICEF, its effect on policy has not been well documented.

In 2013, 3.6 million children were able to access formal and non-formal basic education in safe and protective spaces as a result of UNICEF efforts.⁵³ Many multilevel interventions, such as building of the capacity of teachers and school counsellors to identify and provide referral for psychosocial support, and establishing of school clubs for peer-to-peer support, are key features of UNICEF's school-based response to emergencies.⁵⁴ Furthermore, many other organisations and community structures are included in these interventions with the aim of helping children develop cognitive skills, address violence and abuse that might interfere with learning, provide opportunities for expression through play, and participate in cultural activities, such as sport, music, drama, and art. The effect of these programmes on the wellbeing of children needs to be better quantified through child mental health measures, and efforts are underway to establish a more robust monitoring and assessment framework for psychosocial programmes.

Child-friendly schools promote the best interests of children by encouraging inclusiveness, sensitivity in issues around gender, tolerance, and personal empowerment. Governments are advised to have free enrolment, pass regulations that prohibit corporal punishment, encourage use of local languages, integrate disabled children into mainstream schools, allow pregnant students to complete their education, and mandate that children living with HIV/AIDS have a right to attend school. Between 2008 and 2013, the number of countries with a full or part national policy against corporal punishment in schools increased from 94 to 129.⁵⁵

Promotion of mental health makes up the greatest number of mental health interventions introduced and trialled in schools. Schools have an important role in promotion of mental health as they access a large proportion of the population and try to address risk factors and strengthen protective factors in an efficient way. These whole-school interventions have advanced in the past 20 years, placing emphasis on the importance of the overall school environment and life of the school. Health-promoting schools (HPS) represent one of the most prominent of these strategies, adopted by schools worldwide and promoted by international organisations such as WHO.⁴³ HPS represent a holistic whole-school approach in which a broad health education curriculum is supported by improvements in the physical and social environment of the school, and a school ethos that supports such activities. Schools adopting the HPS framework have shown better child emotional and physical health.⁴³ The HPS framework also has the potential to develop a mechanism of closer integration with healthcare systems.

In a key systematic review of school-based mental health promotion interventions by Barry and colleagues,³ despite the large number of interventions in use worldwide, only 14 studies from LMICs satisfied their inclusion criteria. Robust evidence exists that mental health promotion interventions have positive effects,³ which are improved with increased structure and duration. Of the interventions identified, seven had been done in areas where children had been affected by armed conflict and six were multimodal in design, addressing other factors outside of school, such as in the family home or the community. They conclude that mental health interventions can be implemented in schools, but that few have been scaled up to serve larger populations of school-aged children. Other interventions with varying levels of supporting evidence have been designed to reduce school violence⁴⁴ and bullying,⁴⁵ improve resilience and coping skills,^{46,47} heighten feelings of self-efficacy,³⁸ and reduce school dropout rates.⁴⁸ Panel 1 shows an example of mental health promotion in LMIC schools.

Of note, UN agencies, international non-governmental organisations, and civil society organisations at the international, national, and local level have been widely implicated in the provision of both educational and mental health services. These organisations have, for example, provided services in areas of high poverty and forced displacement, given training on subjects such as safeguarding of children, and challenged practices such as harsh physical punishment in schools.⁵² Panel 2 describes UNICEF practice in this area. Across LMICs, international organisations have undertaken initiatives for improved child and adolescent emotional and social wellbeing, and have provided many school-based mental health initiatives. A WHO mapping exercise of mental health support offered by national non-governmental and international organisations⁵⁶ showed how prominent school-based mental health interventions are. 62% of national non-governmental and 86% of international organisations did their interventions within schools. Many of these interventions included capacity-building initiatives for teachers to improve the emotional and social environment in schools, and build student skills to cope with adverse circumstances.

Prevention and treatment of mental disorders

In the IOM framework,¹ preventive interventions are envisioned in a range: from universal prevention interventions that target all children, irrespective of risk and protective factors (eg, increasing of awareness of mental health issues for all children in a school); selective interventions for subpopulations at high risk of disorder development (eg, because of parental mental health problems or exposure to potentially traumatic events); and indicated interventions that target a small population of children with identified mental health problems (eg, severe psychological distress that foreshadows psychiatric disorders). Treatment and maintenance are aimed at

reduction and management of symptoms in children with identified mental disorders.¹

The populations included in the 22 intervention studies that we identified in our systematic review of preventive and treatment mental health interventions assessed in school settings in LMICs varied greatly. Five studies each took place in the Middle East^{57–61} (one⁶¹ with a follow-up study⁶² also reported but not included as a separate study), the Balkans,^{63–67} and Asia,^{68–72} with four in Africa,^{73–76} two in South America^{77,78} (including a study from Chile⁷⁷ that has since been reclassified as a HIC); and one in Romania (appendix).⁷⁹ The interventions targeted two broad age ranges of children, those aged 6–12 years ($n=9$; 41%) and 11 years and older ($n=8$, 36%), with five studies (23%) including children across these age ranges. Most studies ($n=15$, 70%) targeted children who had been exposed to political violence and conflict,^{57–60,63–70,73,75,76} and two targeted children after natural disasters.^{61,72}

Most studies included a control group ($n=17$, 77%), and of these, half ($n=11$, 50%) adhered to a randomised or quasirandomised study design. Sample sizes in the intervention groups of the studies ranged from 18 to 888 participants, with the studies reporting on a total of 4584 children receiving interventions and 3241 assessed in control conditions. School-based interventions were mainly trying to prevent anxiety, depression, or negative sequelae after exposure to potentially traumatic events. Some interventions had aspects of mental health promotion and disorder prevention, and four^{58,60,68,74} were included in the systematic review by Barry and colleagues³ on interventions for mental health promotion. None were pure treatment interventions, but some had treatment components, so all the included interventions are presented together. The interventions used therapeutic methods broadly consisting of cognitive behavioural interventions ($n=7$, 32%), creative arts and relaxation techniques ($n=5$, 23%), and a mixture of cognitive and other approaches ($n=10$, 45%). Nine (41%) included parents or were multimodal in design, addressing factors across different areas of potential need for children, their families, and schools and communities. Only one included children with learning difficulties,⁷⁸ who represented about 10% of the study sample. Interventions were delivered by teachers ($n=9$, 41%); research assistants ($n=2$); other mental health and associated professionals, such as child psychiatrists, school counsellors and social workers ($n=7$, 32%); and non-specialists ($n=4$, 18%), who included local community members and older school students. The training undertaken to deliver interventions ranged from 1–5 days for teachers to 2 weeks to a year for non-specialists. The sessions were delivered to whole classes in eight studies (36%) and to referred or selected students in 11 (50%), usually after screening, and three (14%) studies randomly allocated students to the intervention. The number of intervention sessions ranged from eight to 20, with a mean of 14 sessions. Most took place two to three times a week, but ranged from taking place on consecutive days to taking place weekly.

The marked clinical and statistical heterogeneity with respect to the interventions done, outcomes obtained, types of schools and children, sociocultural settings targeted, and qualifications and training of those delivering the interventions precluded conduction of a meta-analysis of the findings. More than half of the interventions ($n=12$, 55%) had positive findings^{61,63–67,71–75,78} three had positive findings only according to sex,^{58,69,70} and seven had no positive findings (32%).^{57,59,60,68,76,77,79} The most positive effects were found on post-traumatic stress disorder (PTSD) symptoms, with eight studies (36%) reporting improvements.^{61,63–67,72,75} Findings from only three studies showed substantial improvements in symptoms of depression,^{67,74,78} three recorded improvements in behaviour and conduct,^{70,71,73} and two noted improvement in symptoms associated with grief.^{65,67} Three studies reported negative effects of the interventions done.^{61,70,76}

Discussion

Overview

The available evidence, although scarce, provides support for mental health promotion interventions in LMIC schools. Interventions are more effective if they are more structured and have a longer duration. Evidence about interventions to prevent and treat mental health problems in schools is more complex because only half of the studies we identified had positive findings, with some evidence to suggest that PTSD might be amenable to school-based treatments. Some evidence also suggested sex effects and different effects of interventions depending on severity of symptoms, with the most at-risk children in some conflict-affected populations not benefiting from the intervention. Teachers and lay counsellors have been trained to deliver school-based mental health promotion and disorder prevention interventions with both positive and negative results. The largest component of the present evidence base for school-based interventions in LMICs is those for children who have experienced conflict-related events. We will now discuss three main areas: which mental health interventions should be delivered in schools and by whom; the main implications of the findings for policy and practice; and what further research can contribute to the development of this discipline.

Current role of mental health interventions in schools: for whom and how

Findings from universal mental health promotion interventions in both LMICs and HICs suggest that these interventions are effective at promoting good mental health and that delivery of these interventions within schools is practical, feasible, and scalable. Additionally, mental health promotion interventions have been able to make useful links across education and health sectors, and have been able to incorporate many layers of care for school-aged children with, not

Panel 3: Classroom-based intervention

The classroom-based intervention (CBI) is a manualised group intervention for the aftermath of exposure to potentially traumatic events.⁸² It combines elements of selective prevention and treatment interventions, with 15 sessions over 5 weeks. The intervention aims to reduce psychological distress and improve strengths by combining both trauma-focused components (cognitive behavioural techniques, such as drawings related to adverse events, psychoeducation, and discussion of coping) and creative-expressive elements (drama exercises, movement, and use of music). CBI has been implemented and assessed through cluster randomised trials as part of a multitiered package of services in conflict-affected settings⁸³ in Burundi,⁷⁶ Indonesia,⁶⁹ Nepal,⁶⁸ and Sri Lanka.⁷⁰ Besides CBI, this package included school-based mental health promotion, universal preventive intervention, and treatment interventions.^{84,85} A brief screening method was developed to identify children with psychosocial difficulties who were then offered CBI, and facilitators were trained to further identify children with more severe difficulties, who were then led to other relevant services, such as psychosocial counsellors.

Evaluations of CBI have shown diverse results across different settings and have identified a complex set of mediators and moderators of intervention benefits. The strongest intervention benefits were identified in Indonesia, mainly in improved hope, with additional benefits for girls in PTSD symptoms and functional impairment.⁶⁹ In Nepal,⁶⁸ no overall intervention effects were noted, but subgroup benefits were identified for boys (overall psychological difficulties and aggression), girls (prosocial behaviour), and older children (hope). In Burundi and Sri Lanka, intervention benefits were seen, but negative intervention effects were also recorded. In Sri Lanka,⁷⁰ an overall intervention effect was seen for conduct-related difficulties, and subgroup effects for boys (PTSD and anxiety symptoms) and children experiencing low levels of war-related stressors (PTSD, anxiety, and functional impairment) were also seen. However, girls in the intervention group showed smaller reductions in PTSD symptoms than did waitlisted girls. In Burundi,⁷⁶ no overall intervention effects were identified. Subgroup benefits were identified for children living in large households (depressive symptoms and functional impairment), those living with both parents (PTSD and depressive symptoms), younger children (hope), and those with low levels of exposure to traumatic events (hope). However, negative effects were seen for displaced children such that those in the intervention group fared worse with regard to hope and functional impairment.

Although interpretation of these findings is challenging, a potential explanatory mechanism builds on a socioecological perspective on resilience, in which intervention effects differ depending on the risk and protective factors present at family, peer, and large social levels. For example, children in Indonesia⁶⁹ and Nepal⁶⁸ were generally living in supportive families, with little continued exposure to conflict-related violence. In such settings, brief CBI can build on existing strengths. In Burundi⁷⁶ and Sri Lanka,⁷⁰ however, protracted armed conflicts had severely damaged family-level and neighbourhood-level protective functions, and so violence continued. In these settings, brief CBI could throw particularly vulnerable groups off balance.

Overall, prevention and treatment intervention aims that are combined in CBI should be separated. CBI can be implemented and adapted to maximise the more consistent preventive benefits that have been identified on coping, hope, prosocial behaviour, and functional impairment. For example, in settings of continuing armed conflict and in the presence of groups of particularly vulnerable children, trauma-specific components could be removed to avoid potential harm, an approach supported by a randomised controlled trial in Uganda.⁸⁶ With regard to treatment, the WHO recommendations⁸⁷ for acute stress, PTSD, and bereavement can be applied.

only school staff, but also families and communities. These people are likely to be important components in any mental health service in schools.² A whole-school

approach can be adopted to improve life skills and resilience, and different programmes have been trialled, many incorporating elements of help for children to understand general principles of wellbeing, skills needed to cope, and self-care. Some interventions are tailored to specific populations, such as for those that have had conflict-related disruption or natural disasters, and many have been adapted from interventions in HICs. Studies of interventions in both primary and secondary schools have yielded positive findings. The widespread literature on school-based mental health interventions in HICs, especially those targeting socioeconomically deprived neighbourhoods and primary schools, provides a learning opportunity for development of similar interventions in LMICs.^{2,80} For example, a Jamaican study of children aged 3–6 years⁸¹ has successfully used an intervention developed in HICs to improve so-called externalising issues.

Evidence for more targeted interventions to prevent and treat mental disorders is, however, less consistent. Both universal and selected interventions have been shown to successfully reduce symptoms of PTSD; however, more caution needs to be used for other disorders. These disorders include behavioural difficulties in primary school populations and depression and anxiety disorders, which have a greater prevalence in secondary school populations. Some of the prevention studies show positive effects, whereas null findings and negative effects have also been reported (panel 3). These findings are not dissimilar to those in HICs, where those who have less severe risks and difficulties might benefit more from preventive interventions.² Delivery of mental health interventions in schools can potentially draw on professionals, including school counsellors and teachers, and lay community members and student peers; the studies available show the diversity of people who have delivered these interventions. Findings from a systematic review⁸⁸ of lay community health workers showed how such workers can play an important role in treatment of depression and anxiety in adults. The evidence that these authors were able to obtain from studies of child and adolescent populations was of much lower quality than that from adult studies, limiting the ability to draw clear conclusions, but some moderate quality evidence existed that teachers (who they included as lay community health workers) could reduce functional impairment of PTSD-affected children.⁸⁹ Similar evidence from HICs suggests that teachers can successfully deliver many different mental health promotion interventions, although further evidence is needed to assess teacher-delivered preventive interventions.^{2,90}

Implications for policy and practice

The literature on school-based mental health services for conflict-affected children suggests the need to move beyond expectations that straightforward time-bound interventions can address the multitude of mental health

needs in complex situations. Instead, implementation of tailored and multilayered care systems should be considered that encompass dedicated promotion, prevention, and treatment interventions. In these conflict-affected populations, stressors exist that are related to armed conflict, other forms of violence, and structural inequalities; these continuing stressors have been shown to have substantial negative effects on mental health.⁹¹ In such situations, the question should be asked as to whether conflict-related violence witnessed, experienced, or perpetrated by children is the key issue to be addressed by any mental health intervention. Political violence does not occur in a vacuum, but often against a backdrop of high rates of family violence, with additive negative effects on psychological health.⁹² In light of these complex and often cumulative stressors faced by children and adolescents in conflict-affected LMICs, short school-based conflict-related interventions could not realistically ever be deemed a so-called magic bullet to resolve the highly complex effects of armed conflicts on individuals, families, community structures, and societies. For example, longitudinal studies aiming to identify risk and protective factors have shown both conflict-related trauma exposure and family-level and community-level stressors to be crucial to mental health (eg, family conflicts in concert with stigma from community members related to previous perpetration of violence both contribute to risk).^{93,94}

In addition to present gaps in knowledge, there are practical limitations to implementation of school-based interventions in LMICs. These limitations include, foremost, consideration of children outside of the school system; for example, the increasing number of children living in informal settlements and slums,⁹⁵ and working children. Therefore, present school-based mental health interventions are unlikely to be able to access large groups of children with high levels of health-care needs, and identification of points of access to services for these children should be a key priority. Schools might play a role for these children in helping them gain access to education and health care, but the best model to reach these children remains to be established. Unfortunately, schools can sometimes be places where children experience abuse and violence, either from peers, teachers, or outside groups. For example, peer and teacher victimisation and bullying, corporal punishment, and sexual abuse have all been reported within the school context, and forced recruitment of children into armies has also been seen.^{96–98} School cannot necessarily be assumed to be a safe and healthy place for children.

Findings from mental health interventions for adults in LMICs have enabled identification of barriers of infrastructure and policies, and scarcity of a skilled mental health workforce,⁹⁹ all of which are more acute in child and adolescent services. Gaps in knowledge also exist with regard to how best to translate HIC evidence into policy and practice in LMICs. Teachers have been

used in both HIC and LMIC settings to deliver many mental health interventions.² In LMICs, however, the role of teachers needs to be considered in a broad context. Constraints with use of teachers exist because of the many roles they need to play in low-resource settings.⁴⁹ The importance of teachers as a local resource has been further emphasised because some have been trained to deliver psychological interventions even outside of the school setting.¹⁰⁰ However, the School Health Promotion and Empowerment (SHAPE) programme intervention has shown how lay community members can be trained to deliver effective health promotion interventions in schools.⁴⁹

Research gaps

The focus on conflict-affected children could be because of their actual greater need than other children, or could be because of the fact that they are an easily identifiable group, either in terms of perceived urgency of need or opportunities to fund research. Mental health interventions within schools are potentially able to target larger groups of children than clinic-based referrals, and might therefore be an important component of responses to humanitarian emergencies.^{69,101} Discussion has been ongoing on this topic in the field of humanitarian mental health. Whereas psychiatric epidemiology has focused predominantly on establishing a relationship between past exposure to potentially traumatic events and post-traumatic stress symptoms, authors have called for a stronger focus on the importance of ongoing (daily) stressors for mental health, such as domestic violence, chronic poverty, and social exclusion, which are seen, to varying degrees, in many different LMIC communities.

In these types of situations for which many needs exist across the social systems in which children develop, schools could form a crucial nexus in sustainable delivery of the complex range of actions that are needed to support mental health for children experiencing chronic adversity. Research can offer information on the most appropriate and effective interventions, but for these interventions to be successful, they will have to be based on more detailed knowledge of how school personnel can identify and address needs outside of schools than has been reported so far. For example, further knowledge is needed on how: schools in LMICs can reach out to families suffering economic distress and domestic violence in a non-stigmatising way; parent-teacher associations can promote communication about children's mental health; and schools can promote reconciliation between peers of previously warring ethnic or religious factions.¹⁰² A need therefore exists to assess school-based interventions not only as standalone approaches, but also as components of multilayered interventions addressing broad social complexities. Existing evidence that supports promotion interventions in a whole-school approach could form an appropriate infrastructure for a multilevel approach in which diff-

Panel 4: Research gaps and service development priorities

- How do mental health problems affect educational trajectories, and what is their interplay with poverty, physical health, and family and cultural factors?
- What is the role of schools in achieving positive psychological outcomes for children, especially in the absence of a stable home and in extreme deprivation?
- How can schools best prevent and respond to adverse events, such as abuse, peer victimisation, and corporal punishment?
- Should schools screen for mental disorders, and how can these disorders be most effectively identified within schools?
- What are the most effective interventions across the range of mental disorders, and how can they be tailored to primary and secondary schools and different developmental stages and needs of children?
- Which elements of interventions are effective across diagnostic categories, and which are disorder specific?
- What is the effectiveness of psychological interventions delivered by lay counsellors for children with mental disorders, and what is the role of peer-delivered and internet-delivered interventions?
- What form of delivery offers optimum cost-effectiveness, scalability, and sustainability?

erent types of interventions are integrated.⁸⁵ Additionally, large populations are poorly studied—only one of the studies⁷¹ in the review of preventive interventions came from China, and none were included from India. The research gaps and service development priorities we identify are summarised in panel 4.

Apart from some data on prevention and treatment of PTSD, many child and adolescent disorders that could potentially be prevented or managed within the school context lack any evidence base. A marked shift in worldwide mortality patterns has taken place as more children with neurodevelopmental disorders are surviving childhood. How the needs of these children are being addressed in the school context is unclear.^{9,103} Only one preventive intervention study⁷⁸ included children with learning difficulties. Additionally, scarce good evidence exists on treatment of depression in school-aged children in LMICs, a disorder that makes a substantial contribution to the worldwide burden of disease at present, and which is predicted to become an increasing public health priority.¹⁰⁴ Furthermore, a substantial proportion of adults that have unipolar depression first developed their symptoms in adolescence.¹⁰⁵ If schools can play a part in promotion of good mental health, prevention of development of the symptoms of depression, and treatment of early signs of depression, they could provide an important component of strategies developed to treat this serious, prevalent, and lifelong disorder. Schools have shown that they can access large proportions of the population and they

therefore offer a compelling scalable option to address the mental health gap.

Findings from studies of mental health interventions for adults in LMICs have shown the advantages of a task-shifting approach, successfully using lay workers with little formal mental health training to deliver the interventions.^{88,99,106} Most studies have focused on single-diagnosis categories and have shown that evidence-based treatments are transportable, adaptable, acceptable, and effective in LMICs.^{99,107,108} Success in studies adopting a common-elements and transdiagnostic treatment approach provides promise for and relevance to development of potential interventions for children in LMICs.^{99,108} These approaches have, for example, used lay counsellors to deliver flexibly tailored treatments, with options open to the counsellor to address depression, traumatic stress, anxiety, and substance misuse, dependent on what each individual presents.⁹⁹ These approaches have shown the importance of training and continuing support, and how to manage both of these essential aspects in the scale up of interventions.^{99,107,108} For children and adolescents in schools, if such an approach is combined with screening, an opportunity exists to address shared risk factors within the school environment and to tailor treatment interventions to individual needs. However, in an attempt to emphasise the importance of mental health promotion and disorder prevention and treatment within schools, an inadvertent pathologisation of normative mental phenomena could occur, so such service development in LMICs should be done within the framework of an appropriate use of contextually valid diagnostic constructs alongside public education to improve understanding and reduce stigmatisation of mental disorders. For children with more severe mental health problems, which interventions might best address their needs in LMICs is not clear. These children are at high risk of prematurely leaving school if their difficulties are not addressed and yet mental health services struggle to access this group.¹⁰ Universal strategies seem unlikely to be able to treat these children and so further studies on how to identify, support, and treat them are needed.

HIC studies emphasise the importance of implementation and sustainability of development, and assessment of interventions at the outset of their development.² These interventions, to be effective, need to be able to incorporate implementation science to ensure that they can be scaled up strategically and systematically without unnecessary delay. Sustainable implementation is likely to need support at the therapist, organisational, and community level, and will need concordant local and national political agendas.⁹⁹ However, findings from the Atlas of Child and Adolescent Mental Health Resources¹⁰⁹ suggest that governmental child mental health policies are scarce worldwide and mental health is poorly supported within schools.^{9,109} These factors will hamper service development and cooperation with non-governmental

and international organisations such as UNICEF, and country-specific charities might play an important role in the short-term to medium-term development of mental health interventions in schools.

Limitations

This Review has some limitations. The scarce evidence from which to draw conclusions on all school-based mental health interventions suggests a substantial gap in understanding of how and whether such interventions can be delivered in the school setting. The number of studies of school-based mental health promotion or disorder prevention or treatment interventions is small when the high number of present school-aged children living in LMICs is considered. Findings from our systematic review of prevention and treatment interventions were small in scope, so should be treated with caution. We only searched two databases from Jan 1, 2000 to May 31, 2014; additional database (eg, Education Resources Information Center) and grey literature searches would have potentially identified more studies. Interventions addressing substance misuse and violence for school-aged populations were not included and could have increased the findings. We aimed to provide a broad overview of school-based interventions (spanning promotion, prevention, and treatment). Although this broad focus has advantages, an absence of in-depth investigation of specific topics is inevitable. Furthermore, although the IOM framework was a useful method for description of differences between types of interventions, some overlap remained in the scope of interventions included, which alternative models and frameworks might be able to address. Panel 4 raises areas to be addressed and describes research gaps and service development priorities.

Conclusion

Schools provide an important opportunity to integrate treatment for mental health problems within a system of care that is available, to some extent, throughout the world. The school environment provides a promising avenue for exploration because it is a potentially non-stigmatising environment for children and adolescents to access mental health promotion and disorder prevention and treatment interventions. Through integration into an existing funded system that caters for children and their families, the school offers promising locations for sustainability of interventions. Research gaps are discussed in panel 4 that, if addressed, will greatly improve development of this area. Few studies on prevention and treatment of mental health problems in children exposed to chronic stressors beyond conflict-related violence have been published, although many small-scale studies in LMICs could remain unknown because they have not been assessed or published.¹⁰¹ These studies may not have been published because of the fact that, in low-resource settings, delivery of an

Search strategy and selection criteria

We did a systematic review limited to two databases (Medline and PsycInfo) to gather information on preventive and treatment mental health interventions assessed in school settings in LMICs because this information had not been formally obtained elsewhere. We developed search terms by dividing the research question into six areas: mental health services; mental disorders and health; school-aged children; low-income and middle-income countries; school-based interventions; and evaluation and outcomes (appendix). We identified more than 2300 articles published between Jan 1, 2000 and May 31, 2014 (excluding duplicates) in initial searches, after which we retrieved 47 articles (in any language) that reported on an assessment of a relevant intervention. We identified 22 studies as assessing LMIC school-based mental health preventive and treatment interventions (appendix).

See Online for appendix

intervention is difficult enough, without the additional complexity and cost of an assessment that meets the standard for publication in academic literature.¹¹⁰

Much remains unknown about which elements of school-based interventions, both universal and targeted, are related to better mental health.^{9,101,111} Compared with the amount of evidence available on treatment of adult mental health problems in LMICs, little is known about the best interventions for children.⁸⁷ Further randomised controlled trials are needed not only on different types of treatments, but also on different mental disorders. Moreover, it is important to consider how the evidence can move beyond specific disorders, and towards unifying themes and elements in interventions that offer a transdiagnostic approach.⁹⁹ Whereas in adults, worldwide mental health practitioners are making efforts to scale up interventions already shown to be effective, the situation regarding interventions for children remains at a less advanced stage, for which there is a continuing need to gather more evidence to answer basic questions about the effectiveness of interventions. Up to 90% of individuals who need mental health provision do not receive it, and these figures are highest for LMICs, with depression being the leading mental disorder requiring treatment.⁹⁹ Mental disorders have an earlier average age of onset than most physical disorders. Therefore, elucidation of the role of schools in promotion of mental health and prevention and treatment of mental disorders of children should become a key priority in the worldwide mental health agenda.^{99,112}

Contributors

MF, VP, and WT contributed to the first draft and subsequent revisions of the Review. ST contributed to panel 2.

Declaration of interests

VP has received grants from the MacArthur Foundation and the UN Population Fund. MF, ST, and WT declare no competing interests.

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