

Global Mental Health Research: Time for the Kids

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BACKGROUND:

Although 9 of 10 of the world's children live in low- and middle-income countries (LMICs), and children constitute nearly half of their populations, far too little research has focused on child mental health in LMICs.¹ The expansion of research in global health and global mental health over the past several decades has not yet been matched by new research in child mental health in LMICs.² It's time for that to change.

Research from high-income countries (HICs) tells us why the time has come. 75% of adult mental health problems begin during childhood, with nearly half developing by age 14.³ Undoubtedly, adverse childhood experiences, including abuse, neglect, maltreatment, and deprivation, are plentiful in LMICs, and are potent risk factors for developing mental health as well as physical health problems.

Most LMICs have few mental health professionals, including especially child experts, and insufficient community mental health care for children and adolescents. The World Health Organization found that LMICs have only 0.1 child psychiatrists per 100,000, compared to 1.19 in high-income countries.⁴ Child mental health in LMICs receives little assistance from international donors.⁵ Moreover, the strong association between compound, chronic adversity and mental illness, coupled with the demographic youth "bulge" in many LMICs,⁶ suggests that individually-based clinical treatments alone won't be enough to reduce the burden of mental illness in LMICs.⁷

While LMICs work to expand healthcare infrastructure and access to clinical services, progress can be accelerated by additionally building interventions which mitigate the impacts of the social drivers of mental illness. Relevant social drivers in LMICs could include poverty, armed conflict, discrimination, family violence, and community violence. Although we know

something about these drivers, we know little about which drivers, if targeted, will most effectively reduce risk, alleviate symptoms, and enhance mental health.^{7,8} Moreover, some social drivers appear to differentially affect mental health depending on local context, gender, developmental stage, and other factors.⁹ There is much to be learned.

To advance child mental health research in global health, we convened the first ever satellite meeting on global child mental health research at the 2019 Consortium of Universities for Global Health (CUGH) annual meeting. The CUGH meeting brings together over 170 academic institutions and other organizations from around the world that engage in addressing global health challenges. The presenters at the satellite meeting on global child mental health research were leading researchers in the areas of neuroscience, implementation science, and clinical science with children. They addressed key topics and engaged participants in lively discussions so as to arrive at consensus opinions and recommendations regarding child global mental health research.

The participants included: Dr. Josh Gordon (Director, National Institute of Mental Health); Dr. Theresa Betancourt (Boston College, U.S.); Dr. Mark Van Ommeren, (World Health Organization, Switzerland); Dr. James Leckman, (Yale University, U.S.), Dr. Mary M. McKay (Washington University in St. Louis); Dr. Reshma Shah, (University of Illinois at Chicago, U.S.), and; Dr. Sylvia Kaaya (The Muhimbili University of Health and Allied Sciences, Tanzania).

In this paper, we summarize the presentations and deliberations at the satellite meeting on global child mental health, and highlighting key takeaways.

PRESENTATIONS AND DELIBERATIONS:

Dr. Josh Gordon, Director, National Institute of Mental Health, U.S.:

The Center for Global Mental Health Research at NIMH coordinates research efforts aimed at improving the lives of people with mental illness worldwide. In all of these efforts, NIMH emphasizes the importance of a collaborative approach that centers on local needs and capabilities. All our projects engage local practitioners, scientists, and health policy experts, to ensure that our research takes maximal advantage of local infrastructure and is responsive to local needs. A particular focus is on expanding evidence-based practices through ethno-centric approaches, such involving individuals within local communities to share their lived experience, using visual aids to improve communication, and involving local leaders in designing and implementing research programs. Furthermore, it is important for global mental health work to reach populations with true need, rather than ‘easy to reach’ populations where research work tends to be concentrated.

An example of these collaborative approaches is our Scale-Up Hubs Network. Working in partnership with the Global Alliance for Chronic Diseases, the Center supports 15 research projects in low and middle-income countries, each of which are collaborations across disciplines and national boundaries.¹⁰ These projects are designed to solve challenges facing these countries in delivering evidence based mental health care by studying how to implement sustainable, science-informed mental health policies and programs. The knowledge produced by this network and its precursor, the Collaborative Hubs for International Research in Mental Health, is making its way into practice in South Africa and Brazil, and into public policy in Uganda and Argentina. This work is also finding its way back to the United States, where the knowledge gained is being used to expand healthcare access in underserved communities.

Dr. Theresa Betancourt, Salem Professor in Global Practice, Director of Research Program on Children and Adversity, Boston College, U.S.:

Modern war and terrorism have devastating consequences on children and youth in particular. Globally, at the end of 2017, there were 69 million forcibly displaced people, 40 million internally displaced people, and 25 million refugees; over half of these people were under 18 years old. The number of children living in conflict zones rose by 74% over the last decade. Children exposed to war suffer from high rates of traumatic stress reactions, depression, anxiety, and high-risk behaviors. Many meet diagnostic thresholds of PTSD. Even in more developed areas, young people are increasingly exposed to violent actions, images, and settings, which impact their mental health.

There are 2 common perspectives on the potential impact of exposure to violence on children: 1) violence begets violence, so the exposed children will grow to become violent adults, or 2) coping and resilience is possible with the right support, thus mitigating its effect on quality-of-life outcomes. A deeper understanding of these perspectives on the intergenerational effect of war is central to the work of global mental health professionals around the world.

Dr. Betancourt's current research focuses on 3 key areas:

1. Children affected by communal violence/armed conflict in Sierra Leone: A randomized control trial measured the impact of a Cognitive Behavioral Therapy-based intervention--the Youth Readiness Intervention (YRI) -- on emotional regulation, prosocial behavior, functional impairment, psychological distress, and social support in Sierra Leone. YRI recipients in Sierra Leone were 6 times more likely to persist in school as compared to students who did not receive YRI. Among youth in school, blinded assessments indicated that YRI youth demonstrated significantly better classroom performance as well as

attendance. The “Youth FORWARD” scale-up study, to integrate the YRI into a locally funded youth employment/entrepreneurship program is underway and a Type II Implementation-Effectiveness Study with N=1200 youth is testing effectiveness in this new delivery platform while also investigating Collaborative Teams as a strategy for quality improvement and sustainment. ¹¹

2. Family Strengthening Intervention for Early Childhood Development and Violence Prevention (Rwanda): ‘Sugira Muyango’ targets families in extreme poverty with young children birth-36 months. The intervention supports responsive parenting to promote ECD and prevent violence through active in-home coaching and father engagement. Standard content on early childhood stimulation, nutrition, and hygiene are presented, along with content on problem solving, conflict resolution, and stress management. This intervention was piloted and tested using a cluster randomized trial. Families receiving intervention demonstrated important improvements in child development as well as reductions in violence including reduced intimate partner violence and harsh punishment of children. Secondary outcomes also indicated a decrease in maternal and paternal depression and anxiety. Now, the program is being transitioned to a larger scale-up, reaching all Ubudehe 1 (those in the most extreme poverty) in three districts in Rwanda using Collaborative Teams as an implementation strategy to reach over 10,000 children and more than 14,300 caregivers. ^{12,13}
3. Promoting resilience and healthy parent-child relationships in refugee families in the US (Somali Bantu refugees and Bhutanese refugees). The Family Strengthening Intervention for Refugees (FSI-R) was developed using a community-based participatory research approach as a home visiting intervention ‘for refugees, by refugees.’ Using a strengths-

based approach, the FSI-R aims to improve parenting strategies and communication, while also helping families navigate resettlement stressors and acculturative challenges. An 80-family feasibility and acceptability pilot with Somali Bantu and Bhutanese refugee communities in New England has been completed, demonstrating significant decreases in child mental health problems for both Somali Bantu and Bhutanese refugees and reductions in family conflict among Bhutanese families. A 300-family effectiveness trial is currently ongoing with the same communities. ¹⁴

Dr. Mark Van Ommeren, Coordinator of the MER team (Evidence, Research and Action on Mental Health and Brain Disorders and Substance Abuse), Department of Mental Health and Substance Abuse, World Health Organization, Switzerland:

Communities that are affected by adversity (violence, insecurity, and poverty) are commonly impacted by prolonged disabling emotional distress. Community members experience the stress in the form of mental disorders such as Major Depressive Disorder and PTSD. However, many nations lack resources for mental health and psychosocial care for all people in need; therefore, there is a great need for innovative, low-cost solutions. Innovative psychological interventions are a promising new direction due to their good efficacy and high rank in research priority setting (supported by 50+ trials from LAMIC). WHO is developing, testing, and publishing such interventions. Additionally, WHO will mentor stakeholders in use of such interventions and develop guidance to set up psychological services in communities that are affected by adversity.

In order to make psychological interventions scalable, WHO recommends reducing the reliance on specialists by instead training lay people or nurses/community members, publishing

self-help guides for community members, using one treatment for multiple problems where possible, possibly foregoing the diagnostic assessment, and focusing on developing skills in community members for self-management. If the low resource intensity psychological intervention is not successful, WHO recommends a 'step up' to more intensive care with a specialist, if available. In this way, less severe cases do not utilize unnecessary resources. WHO is currently working to publish a range of scalable evidence-based psychological interventions that can be adopted and implemented in communities affected by adversity. So far, these include: 1) Thinking Healthy for Antenatal Depression,¹⁵ 2) 8-Session Group IPT for Depression.¹⁶

Communities may also develop and test their own new interventions. WHO will mentor stakeholders in the use of such interventions to break down the process into 5 phases: Phase 1) Adaptation of intervention for local sociocultural context (qualitative research), and if possible, an uncontrolled pilot run, Phase 2) Small, feasibility randomized controlled trial to explore (a) feasibility, safety, and delivery of the intervention in an RCT and (b) feasibility of high quality evaluation (n = 40 -120), Phase 3) Process evaluation (qualitative research) of administering and trailing the intervention to finalize intervention and prepare for Phase 4, Phase 4) Large definitive, state-of-art RCT (n = 350 – 550), Phase 5) Process evaluation (qualitative research) of administering the intervention to prepare for scaling up (n = 25).

A number of interventions have been successfully implemented: 'Effect of a Multicomponent Behavioral Intervention in Adults Impaired by Psychological Distress in a Conflict-Affected Area of Pakistan: A Randomized Clinical Trial'¹⁷, 'Self Help Plus: study protocol for a cluster-randomised controlled trial of guided self-help with South Sudanese refugee women in Uganda'¹⁸, 'Early Adolescent Skills for Emotions'¹⁹, 'Step-by-Step (Khoutweh-Khoutweh)'.²⁰

Dr. Reshma Shah, Assistant Professor of Pediatrics, University of Illinois at Chicago, U.S.:

The first 3 years of a child's life can offer an incredible window of opportunity for future well-being. However, for the millions of children living in poverty worldwide it can be period of extreme vulnerability resulting in a cascade of physiologic and epigenetic disruptions that ultimately hinder healthy brain development which, in turn, result in early delays in language, social-emotional, and cognitive outcomes. Because developmental skills are predictive of later educational, emotional, and behavioral well-being, these early disparities have significant implications for a child's well-being. For example, in the United States, social, emotional and behavioral health disorders are among the top five chronic conditions in the pediatric population and are two times more likely to occur in children living in poverty as compared to children living above the poverty line.

Importantly, a growing body of multidisciplinary research (economics, developmental psychology, epigenetics, and pediatrics) has repeatedly demonstrated that the quality of caregiving a child receives during these early, important years of brain development can exacerbate or mitigate the effects of poverty. Specifically, this research demonstrates that a cognitively enriched home with nurturing caregiving can promote healthy development even in settings of adversity. However, it is not hard to imagine why it would be extraordinarily difficult for families to provide quality caregiving when faced with adversity which is why having policy level factors in place such as improving maternal education and ensuring safe and secure environments are needed.²¹ Additionally, and the focus of Dr. Shah's work, is the use of the healthcare setting and routine health care visits, such as the well-child or immunization visits, to help promote these key parenting behaviors. The primary care setting offers a significant

opportunity to promote positive parenting behaviors. Advantages include: 1) a pre-established location and infrastructure 2) accessibility to a large population of families, and 3) a non-stigmatizing setting.

Dr. Shah's team is currently working to build on existing innovative primary care-based programs and further leverage the primary care setting, with a specific focus on clinics serving low-income communities. Their goal is to implement brief, accessible and sustainable programs in healthcare settings to encourage early childhood development and expand reach to the many families who may benefit from a less intense, population-level approach. Towards this goal, they are developing a health care-based model, Sit Down and Play (SDP), that capitalizes on the advantages of routine well-child visits from 2 months to 24 months age to supports evidence-based parenting behaviors that promote early child development. SDP relies on existing clinical staff, nonprofessionals, or volunteers for delivery and embeds services within well-child appointments while families wait to be seen by their primary care provider without disrupting existing clinical flow processes. In addition to being implemented in the United States, and in collaboration with physicians and researchers from Jawaharlal Nehru Medical College, this model has also been culturally adapted for implementation within healthcare settings serving a predominantly rural population in Karnataka, India. ^{22, 23, 24}

Dr. James Leckman, Professor of Child Psychiatry, Psychology, and Pediatrics, Yale University, U.S.:

The global community must address the root causes of violence and conflict. Children and families can be agents of change for peace. Young children's healthy development depends on their receiving nurturing care that ensures the child's health, nutrition, safety and security, as

well as opportunities for early learning.²⁵ Early Childhood Development (ECD) programs aimed at enhancing responsive parenting can also reduce the impact of adverse childhood experiences (poor nutrition, neglect, abuse, and other forms of dysfunction in the home). They can also impact brain structure and function, our physical health, and even how our DNA is read and transcribed.²⁶ As a consequence, there is an urgent need to provide high quality ECD services in low-middle income countries and to build multi-sectorial partnerships with government officials at the local and societal levels to sustain ECD services and bring them to scale.

To address this need, the Early Childhood Peace Consortium²⁷ was founded in 2013 at the Headquarters of the United Nations with the support of more than 140 global partners from multiple sectors including civil society, the social and mass media, government officials, as well as practitioners and academic scholars. A ‘Theory of Change’, was then developed by members of the ECPC, which was designed to inform government officials concerning the societal risks that result when quality ECD services are lacking. This ‘Theory of Change’ illustrates how ECD services can contribute to reducing violent conflict and sustaining peace through increasing social cohesion horizontally (within the family) and vertically (within the community and the region) and how this has the potential to have a major impact on global peace.²⁸

As a result, at present, Dr. Leckman and his team are working in close collaboration with UNICEF and other global partners to rigorously evaluate promising ECD programs in Lebanon, Brazil and Saudi Arabia.²⁹ In addition, as part of the LINKS Initiative, based in Belfast, Northern Ireland and funded by the National Institute Health Research in the United Kingdom, ECD programs are now being piloted in conflict affected regions of the world (Colombia, Egypt, Kyrgyzstan, Mali, Palestine, Tajikistan, Timor-Leste, and Vietnam).

We need to take action to make our world a better place for our children and for future generations. Next steps include a commitment to refine, adapt, and implement in a sustainable fashion ECD programs of proven value across the globe.

Dr. Sylvia Kaaya, MD, PhD, Muhimbili University of Health and Allied Sciences, Dar Es Salaam, Tanzania:

Exposure to stressful events such as violence, neglect, and maltreatment are correlated with higher prevalence of psychopathology in children and adolescents, including depression, anxiety, PTSD, conduct disorder, and disruptive and reactive behavior disorder. Additionally, the effects of harsh discipline of children include both internalizing and externalizing problems, as well as poor working memory and school achievement. These identified risk factors for child and adolescent mental health disorders are mirrored in studies across the globe. Interestingly, associations between postnatal depression and infant and child growth stunting have been found in some SSA countries, but not in others. This suggests that variations in kinship and cultural supports for new mothers, and socio-economic and cultural factors need to be explored to understand this further.

In particular, there is a high magnitude of mental health problems in children in sub-Saharan Africa (SSA), yet only a few national-level studies on the prevalence of child/adolescent mental disorders. Dr. Kaaya's work is focused on this area to address this need.

Dr. Kaaya and her team tested a preventive mental health intervention, "Healthy Options", which is designed to enhance the quality of life and mental well-being among women living with HIV and depression in Tanzania. The intervention is designed to occur while these mothers receive prevention of mother-to-child transmission of HIV services (PMTCT

services). Maternal and infant outcomes were evaluated at six weeks and nine months post-delivery. Results of this intervention showed promising results, demonstrating that depression can be addressed effectively within the context of PMTCT services. ³⁰

Dr. Mary M. McKay, Dean of the Brown School, Washington University in St. Louis, U.S.:

The population of sub-saharan Africa (SSA) is currently undergoing rapid growth with the majority of the population being under 25 years of age. Thus, the physical and emotional wellness of young people in SSA is a high priority as economic, social and health outcomes will be influenced by the trajectories of youth. Currently, there are emerging concerns that rates of childhood disruptive behavior disorders in low and middle-income countries is elevated (12-33%). These youth mental health challenges existing within low income countries (including those in SSA) which dedicate approximately 5 times less of their annual health budget to alleviating mental health burdens than high income countries. Therefore, it is especially critical to develop scalable and cost-efficient interventions to reduce the mental health burden in low and middle income countries.

New youth mental health supports can be guided by frameworks, such as PRISM (Practical, Robust Implementation and Sustainability Model). This is a comprehensive model which can be used to guide the translation of research into practice by specifying multi-level aspects of service implementation aimed to influence its adoption, integration, and sustainment. More specifically, PRISM emphasizes organizational perspective on a new practice (i.e., readiness, barriers of staff, burden), patient perspective (i.e., relevance, barriers, burden), external environment (i.e., reimbursement, resources), infrastructure (i.e., training/support, plan

for sustainability), organizational characteristics (i.e., agency culture, management support, leadership), and patient-level influences (i.e., competing demands, beliefs).

Dr. McKay and colleagues (Ssewamala and Sensoy Bahar) are leading the SMART (Strengthening Mental health And Research Training in sub-Saharan Africa) Center, a NIMH-funded trans-disciplinary collaborative guided by the aim to reduce gaps in child and adolescent mental health services through science-based methods and research in 3 sub-Saharan African countries: Ghana, Kenya, and Uganda. Key activities of the center include: 1) networking and information sharing on scale-up implementation methodology and translation of findings in timely ways within the center and with other consortiums; 2) technical support for new implementation and research project development; and 3) support for stakeholders to carry out independent research projects, including testing implementation strategies to scale up child and adolescent mental health preventative interventions in diverse community settings. In addition, there is a high priority on engaging in capacity building that targets policymakers and NGO stakeholders who are interested in applying evidence-based policies and programs. Finally, the SMART Africa team are producing academic products, including 'The prevalence of disruptive behavioral disorders and ADHD among school-going children in Southwestern Uganda',³¹ 'Adapting a U.S. based evidence-based practice to the Uganda context'³² and 'Implementation science in the global health setting: Working with governmental structures & communities in Uganda'.³³

CONCLUSIONS:

What evidence-based preventive and treatment interventions exist and can be implemented in LMICs?

The presenters discussed multiple child-focused interventions that they or others have implemented and evaluated in LMICs. The discussions made reference to a 2013 review by Barry et al.,³⁴ which identified 22 school based interventions or community-based youth mental health interventions that had been evaluated in LMICS with either RCTs or quasi-experimental designs since 2000.

Several existing child-focused interventions address adverse environmental conditions in LMICs, including those social drivers mentioned earlier: poverty, discrimination, family violence, community violence, and armed conflict. To encourage and guide further research focused on mitigating the impact of social drivers, we prepared Table 1. This identifies six social drivers of mental illnesses and selected potential mitigation strategies that have been implemented in LMICs or other low resource settings. Some of these interventions (e.g., cash transfer, improved housing/neighborhood, parenting training, social support) have shown promise in LMICs,^{9,35,36} but we don't yet have a good understanding of the mechanisms and pathways by which they work, and others still need to be implemented and evaluated in different LMIC contexts.

Given the large number of children with unaddressed mental health needs in LMICs, scaling-up interventions to meet population needs is a global mental health priority. To make psychological interventions scalable, the presenters recommended reducing the reliance on specialists by instead training nurses or community health workers, using one treatment for multiple problems, forgoing diagnostic assessment, integrating mental health care into pediatric primary care and other sectors (e.g. education, family welfare, justice), and focusing on developing skills for self-management. Lastly, it was noted that of course not all LMIC settings

are equivalent, so contextual and sociocultural adaptation is required before moving interventions from one context to another.

What policy interventions can most effectively improve child and adolescent mental health?

Multi-sectoral partnerships with government officials at the local, regional, and national levels and with non-governmental stakeholders are needed to stimulate research and promote the delivery of evidence-based child mental health and early child development packages. Researchers may help to facilitate these partnerships by engaging policymakers across government sectors (e.g., health, education, family welfare) and stakeholders groups (e.g., educators, families, advocates) and by conveying the experiences and outcomes of children who received such services to demonstrate the value to society of investing in programs targeting children.¹⁴ Conducting such research in LMICs, however, faces many challenges, including lack of funding, training opportunities, mentors, and institutional support.³⁷

One successful example of research partnerships is a series of NIMH initiatives based on the Hubs model (e.g. Research Partnerships for Scaling Up Mental Health Interventions in LMICs).¹⁰ The Hubs model aims to develop new scientific knowledge by supporting public health-relevant mental health implementation research and building in-country research capacity through stakeholder partnerships and international networking. It builds partnership with both local non-governmental stakeholders and a LMIC government agency to promote faster translation of research findings to practice and to foster science-informed mental health policies and programs within the country. This in turn requires investments to help build the institutional

and administrative capacity of academic, governmental, and NGO partners in LMICs necessary for conducting research and promoting these partnerships.

Finally, the presenters endorsed using clear and strategic communication approaches to share key research findings with policy makers at critical points in the legislative and policy development processes. Researchers can draft policy briefs using language that can easily be adapted for use in mental health laws and policies. Researchers can highlight the shared benefits of child mental health research for children living in low-resource settings in different countries globally, including in the U.S.

What knowledge gaps, if filled through research, would substantially advance the field?

The presenters called for new research to accelerate the uptake of existing evidence-based interventions and to test new interventions designed to modify selected social conditions that drive up risk for mental illness among youth living in LMICs. Existing, evidence-based mental health services for children and adolescents are not widely used. At the same time, research on quality improvement is needed to determine how to sustain effective services when expanding their reach to large populations.

To promote expanded services, policymakers need much more information that is currently available. For example, new research should examine the mechanisms and pathways by which interventions - at the individual, family, community, environmental, or policy levels - exert their effects on mental health outcomes. Moreover, we need to shed light on how the various elements of multi-component or multi-level interventions may work synergistically to amplify beneficial effects. Policymakers also need research data on costs, budget impact, and return on investment for youth mental health services. Cost-effectiveness research can help them

to select from among different service options. Essential for all of this new research is keeping an eye on issues of equity and disparity, to understand which interventions and combinations of interventions are optimal for different population groups and settings, and to ensure that access to high-quality mental health services extends to all LMIC youth.

In conclusion, now is the time for building child mental health research in LMICs, especially for children exposed to chronic, compound adversity. Some evidence-based interventions from other settings can be adapted for the local contexts and then scaled up in LMICs. At the same time, de novo interventions are needed to target unique social and environmental characteristics of LMICs and thereby modify upstream social drivers of mental illnesses so that risk is lowered, and fewer children require individual clinical services. The results of such a research agenda would go a long way in guiding new policies and practices for sustainable child mental health care in LMICs.

Table 1. Social Drivers of Mental Illness and Selected Mitigation Strategies

Social Drivers	Selected Mitigation Strategies
Adverse social dynamics (e.g., stigma, discrimination, lack of access to mental health resources)	<ul style="list-style-type: none">• Policies or programs to reduce gender/sex discrimination (e.g., Gibbs et al, 2020 ³⁸; Fazwi et al, 2019 ³⁹)• Policies or programs to reduce stigma (Kakuma et al, 2010 ⁴⁰)• Interventions to enhance access to care (Dawson et al, 2019 ⁴¹; Carswell et al, 2018 ⁴²)
Family poverty and associated factors (e.g., food insecurity, un/under-employment, inadequate housing)	<ul style="list-style-type: none">• Employment (Desrosiers et al, 2020 ⁴³; Baksheev et al, 2012 ⁴⁴)• Economic empowerment (Ssewamala et al ⁴⁵, 2012; Kim et al, 2009 ⁴⁶; Kivumbi et al, 2019 ⁴⁷)• Food assistance (Rodgers et al, 2007 ⁴⁸)• Early childhood stimulation (Gertler et al, 2014 ⁴⁹)
Harmful family-based interactions (e.g., harsh disciplinary practices, poor emotion regulation, child neglect/abuse, impoverished communication)	<ul style="list-style-type: none">• Positive parenting and family techniques (Bell et al, 2008 ⁵⁰; Annan et al, 2017 ⁵¹, Betancourt et al, 2017 ⁵²; Shah et al, 2017 ⁵³; Tolan et al., 1996 ⁵⁴)• Antenatal depression management (World Health Organization, 2015 ⁵⁵; Sikander et al, 2015 ⁵⁶)• Child protection policies with enforcement (Bick et al, 2015 ⁵⁷)• Community-based interdisciplinary approach (Marques et al, 2015 ⁵⁸)
Unfavorable community/neighborhood characteristics (e.g., impoverished infrastructure, violence, crime, poor social cohesion)	<ul style="list-style-type: none">• Violence reduction (Pronyk et al, 2006 ⁵⁹)• Social/Peer support (Kumakech et al, 2009 ⁶⁰)• Neighborhood/housing improvement (Leventhal et al, 2003 ⁹)
Environmental trauma (e.g., armed conflict, natural disasters)	<ul style="list-style-type: none">• Interventions for children exposed to armed conflict (Qouta et al, 2012 ⁶¹; McMullen et al, 2013 ⁶²; Karam et al, 2008 ⁶³)

	<ul style="list-style-type: none"> • Interventions for children exposed to natural disasters (Shooshtary et al., 2008 ⁶⁴) • Interventions for child refugees (Sijbrandij et al, 2017 ⁶⁵)
<p>Inadequate school support (e.g., harsh disciplinary practices, lack of access to prevention)</p>	<ul style="list-style-type: none"> • Improved classroom management and disciplinary practices (Khamis et al, 2004 ⁶⁶) • Life skills education (Ager et al, 2011 ⁶⁷; Srikala et al, 2010 ⁶⁸) • School program to prevent depression (Rivet-Duval et al, 2011 ⁶⁹) • Teacher and parent education (Huang, et al, 2014 ⁷⁰)

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