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## TOXIC STRESS AND PTSD IN CHILDREN

# Children's prolonged exposure to the toxic stress of war trauma in the Middle East

Conflict leads to toxic stress and health problems in childhood and beyond. Long term investment in evidence informed mitigation strategies is needed to end the devastating cycles of violence, write **Muthanna Samara and colleagues**

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Violent political conflict has had a devastating effect on the physical and mental health of children in the Middle East (box 1).<sup>1</sup> Many have been killed or injured. Many have been displaced, including 2.5 million Syrian child refugees.<sup>2</sup> Conversely, Palestinian children under blockade in the Gaza Strip cannot escape even to relative safety.<sup>3</sup>

effect of war means scant attention has been paid to longer term mental health support. A cohesive effort is needed among policy makers, humanitarian agencies, and health services in the region to increase resilience and prevent escalation in mental and physical health problems, and to advocate for security and health.<sup>13</sup>

### Box 1: A century of political violence

The Middle East has seen several wars since the second world war—between Arab states and Israel, between 1948 and 1982; the Lebanese Civil War, from 1975 to 1990; wars in Iraq beginning in 1980 and with continuing unrest to the present day; the invasion of Kuwait in 1990; and the North Yemen Civil War, from 1962 to 1970. In late 2010, anti-government protests throughout the Middle East gave rise to the so called Arab Spring. Subsequent Libyan, Syrian, and Yemeni civil wars have been violent and prolonged. In addition, Palestinians in the Gaza Strip have experienced three wars in the past 12 years and have been living under a blockade since 2007.

Yemen's dire situation has triggered the world's biggest food security emergency and the largest recorded cholera epidemic.<sup>4</sup> Children in conflict settings may lack access to water and experience bombing, loss of their home, and the injury or death of loved ones.<sup>5 6</sup> Sexual exploitation and abduction can proliferate when rule of law collapses.<sup>1</sup> The effects of poverty and destroyed healthcare and schools can persist long after violence has ceased.

The threat of harm intensifies exposure to psychological trauma.<sup>1</sup> Continuous exposure to trauma is associated with mental health problems including post-traumatic stress disorder (PTSD)<sup>7</sup>, emotional dysregulation, depression, and suicidal thoughts or behaviors.<sup>8</sup>

Toxic stress, when children experience strong, frequent, or prolonged adversity without adequate adult support.<sup>1 9 10</sup> can disrupt development of the brain and other organs and increase psychopathology as well as cognitive and emotional impairment.<sup>10 11</sup> Effects are likely to persist into adulthood even after violence stops. Prompt identification and evidence based treatment of serious psychopathology can help.<sup>12</sup>

Children must be supported in healing from the effect of toxic stress to break the cycle of violence in which the next generation struggles to rebuild society after the trauma of war.<sup>1</sup> But a focus on the short term

### Toxic stress and mental health

Children in armed conflict areas in the Middle East experience high rates of mental disorders, including PTSD, depression, anxiety, behavioral problems, and attention deficit hyperactivity disorder, as well as functional impairment.<sup>14</sup> Worldwide, as many as one in five children and adults affected by conflict may experience mental ill health, compared with a mean global prevalence of one in 14.<sup>15</sup>

Children in conflict areas are also at increased risk of suicide ideation, enuresis, nightmares, hypervigilance, grief, separation anxiety disorder, phobia, stuttering, stereotypic movements, refusal to attend school, learning disabilities, conduct disorders, aggression, and feeding disorders in infancy or early childhood.

These conditions impair children's ability to engage in daily life, to focus and perform in school, to form relationships and attachments, and to feel safe.<sup>16-23</sup> Multiple exposures to violence cumulatively increases the risks.<sup>22 24 25</sup>

Without early intervention, these mental health problems are likely to continue into adulthood and to predict adverse outcomes. Untreated adults who experienced adverse childhood experiences may carry 12 times the risk for alcoholism, drug misuse, depression, and suicide attempts. They are also more likely to have physical health conditions, including heart disease, cancer, chronic lung or liver disease, and skeletal fractures.<sup>26</sup>

Young Kuwaiti adults' educational and occupational outcomes, for example, were adversely affected by exposure to war trauma a decade before.<sup>27-29</sup> Boys with greater exposure were less likely to pursue further education and more likely to have post-traumatic stress, poor sleep quality, high body mass index, and poor self-reported health in adulthood.

### Mediating factors in toxic environments

Children’s risk of poor mental health is mediated by genetic, familial, societal, and environmental factors, which influence their development in a toxic environment.<sup>30-32</sup> Effects are subsequently transmitted through biological, psychological, familial, economic, and societal pathways.<sup>33-35</sup> In war environments, good parenting, relationships with teachers, social networks, and healthcare systems are also affected by trauma and toxic stress and may be less protective or even harmful.<sup>25 36</sup>

Children with traumatized parents may be at increased risk of poor mental health outcomes, particularly without social support.<sup>33-35</sup> Postwar trauma among Palestinian fathers,<sup>37</sup> and arrest of Kuwaiti fathers during the war,<sup>27-29</sup> for example, were related to increased mental health problems, avoidance behaviors, and attachment insecurity among their offspring.

Children born after conflict stops can also be affected. Intergenerational transmission has been observed in increased rates of mental illness in the children of Holocaust survivors, for example.<sup>38</sup>

Poverty that persists after violence stops affects children directly and indirectly through the parent-child relationship, aggravating toxic stress responses.<sup>39 40</sup> In addition, parents worrying about daily survival can become less nurturing and more aggressive towards their children.<sup>25 39 41</sup>

### Mental health services in the Middle East

Health services in Middle Eastern countries are provided by governmental, commercial, and non-governmental organizations. Disruption to health services often continues even after violence stops,<sup>35</sup> while demand for healthcare remains high. The Libyan system operates far below the needs of the population, for

example,<sup>42</sup> including mental health services.<sup>43</sup> Retention and recruitment of staff in war contexts is especially difficult, for reasons including disruption to education systems (boxes 2 and 3).<sup>35</sup>

#### Box 2: Maternity services in Palestine

Disruption to maternity services increases risks of health and birth complications. Delays caused by military checkpoints in Palestine, for example, were associated with more home births (8% in 1999 and 33% in 2002).<sup>44 45</sup> Low birthweight and prematurity raise risks of long term adverse outcomes among children, including mental health and behavioral problems, eating problems, lower IQ, and poorer educational outcomes.<sup>46 47</sup>

#### Box 3: Mental health services in Yemen

Rates of mental health problems are much higher in Yemen than other countries in conflict.<sup>23</sup> War, floods, epidemics, poverty, and water shortages have damaged healthcare and education systems,<sup>48-50</sup> and they lack practitioners.<sup>4</sup> An intervention among general practitioners was found to improve their performance in the emergency management of acute medical problems.<sup>51</sup> WHO’s Mental Health Gap Action Programme subsequently trained health and community workers to increase access to mental health services,<sup>4</sup> although these services have not been evaluated for use and effectiveness.

Although some national healthcare plans have started to recognize mental healthcare as essential (such as those in Iraq and Palestine),<sup>52 53</sup> many Middle Eastern countries tend to lack mental health funding, resources, and workforce (fig 1).<sup>55</sup> Psychosocial service providers face a lack of qualified, specialist staff, financial constraints, political conflict, and poor community awareness, a study of practitioners at refugee camps in the West Bank, Palestine, found.<sup>56</sup>

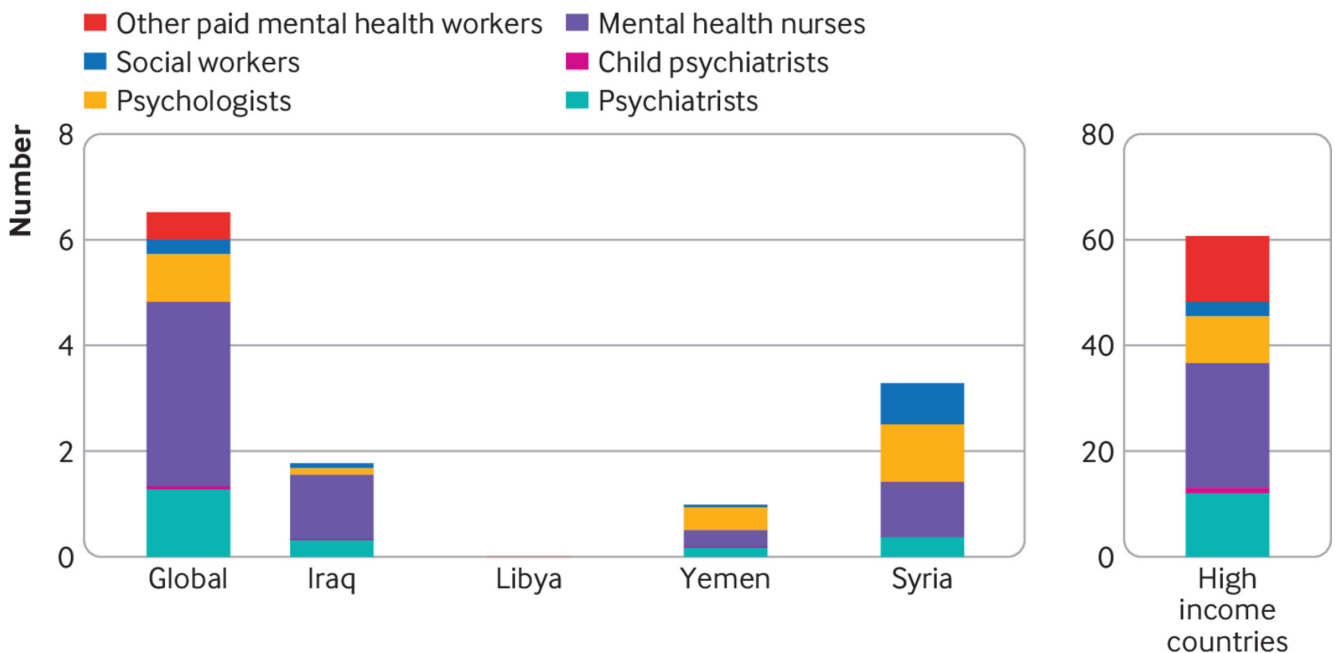


Fig 1 | Mental health workforce (rate per 100 000 population) in Middle Eastern countries with continuous conflict, compared with high income countries and global rate (where value is zero this is equal to zero or not reported).<sup>54</sup>

Additionally, stigma means people are less likely to access help that even when services are offered. Further obstacles may include

inadequate transport and complex referral processes. Patients may seek alternatives, such as faith healers, as seen in Iraq.<sup>57</sup>

## Psychosocial interventions and service transformation

Limited service provision and reluctance to access services must be at the forefront when designing mental health interventions for children in areas affected by conflict. A growing body of research from the Middle East and elsewhere shows the complexity of such children's needs, influenced by the interplay of multiple risk and protective factors. Overwhelming needs and paucity of specialist resources indicate the importance of multimodal interventions that maximize current resources and community strengths.<sup>58</sup>

Evidence also shows the importance of tackling concurrent challenges that mental health services face in Middle Eastern cultures, such as stigma<sup>59</sup>; collective exposure to toxic stress of children, parents, communities, and professionals; limited contextualization and cultural adaptation of interventions; and constraints in infrastructure and staff competencies.<sup>60</sup>

First level response interventions should aim to strengthen children's coping strategies and resilience, life skills, and symptom management. Several psychoeducation and "trauma informed" (meaning that activities link to children's trauma exposure without intending for them to re-experience and re-process their experiences) programmes have shown promising results.<sup>61-63</sup> These can include, body-mind interventions such as mindfulness that deal with physical and psychological presentations of distress (such as meditation, breathing techniques, guided imagery, and self-expression through words, drawings, and movement). Creative interventions emphasize interactive activities such as drama and music to help children build better relationships and improve resilience and wellbeing.<sup>64-68</sup>

Crucially, such programmes bypass many challenges faced by mental health services in the Middle East because they are low cost and can be delivered by paraprofessionals (or community volunteers), peer educators, teachers, social care or non-governmental organizations, who nevertheless require training, supervision, and links with mental health services.<sup>6</sup>

First level interventions are non-stigmatizing, as these can be provided to groups in schools, community, and religious centres. These contexts also solve access difficulties during conflicts and capitalize on feelings of belonging and comfort associated with their functions (especially religious forums). In Palestine, for example, school based intervention programmes including mind-body skills group programmes<sup>68</sup> and teaching recovery techniques<sup>69,70</sup> showed success in decreasing various mental health problems among children and adolescents exposed to war trauma (box 4).

### Box 4: A psychosocial school based support program in the Gaza Strip, Palestine

Wars in Palestine<sup>3</sup> exposed children to trauma and mental health problems.<sup>25</sup> After the 2014 war, teachers, social workers, and counsellors implemented a psychosocial support programme in all schools in the Gaza Strip. Parents were actively involved. Cognitive behavioral techniques included group psychoeducation, discussion of past traumatic experiences, physical exercises, cooperative games and drama. PTSD, other emotional, and somatic symptoms, as well as cognitive functional impairment, significantly decreased after the intervention.<sup>64</sup>

The second level of interventions can draw on contextualized frameworks such as trauma focused cognitive behavioral therapy (CBT), narrative exposure, and child centred therapy, and requires skilled mental health professionals<sup>71</sup> lacking in Middle Eastern contexts. These should be offered to children whose symptoms

continue after a resilience building approach. Long term investment in mental health will mean that more children can be targeted for intervention at this level. Ideally parents are involved, otherwise their own unresolved distress can adversely affect their children. Psychoeducation and parent-child dyadic psychotherapy or trauma focused CBT have been applied in war contexts (in Palestine, for example), but these should be adapted to the Middle Eastern culture and combined with social support.<sup>72</sup> Coordination of services can offer adult mental health input.

Children, young people, and parents should actively be involved in the co-design and adaptation of interventions to ensure they are engaging and culturally acceptable. Interventions and capacity building should be framed in a stepped care service model (box 5).<sup>73,74</sup>

### Box 5: A psychotherapy treatment in the Gaza Strip and the West Bank, Palestine

The occurrence and treatment of psychiatric disorders in the Gaza strip and the West Bank in Palestine were studied from 2005 to 2008 among patients older than 1 year. They were clinically assessed by a psychologist or a psychiatrist (supervised by a senior psychologist or psychiatrist) through a local mental health and counselling health network. Psychological care, consisting of individual, family, group, or dyad psychotherapy,<sup>85,86</sup> at home or in a consultation centre, was provided to the patients with diagnoses with PTSD, depression, or anxiety. The majority (79%) had better symptoms through psychotherapy and around 30% required additional psychotropic medication.<sup>87</sup>

Digital interventions and staff training can be delivered in conflict affected areas using smartphones.<sup>75-77</sup> These have been shown to be efficient in assessing, screening, evaluating, and intervening among children, adults, and practitioners in Middle Eastern countries, where smartphone use is common.<sup>78</sup> Digital tools are relatively low cost and can be easily integrated to both response levels (box 6).

### Box 6: An online CBT intervention in Iraq

Technology can help treat mental health problems in unstable areas that lack healthcare practitioners.<sup>75</sup> An online CBT approach was developed to treat PTSD and other emotional problems in adults in Iraq.<sup>75,79</sup> Patients and trained therapists in Iraq, the Middle East, and Europe communicated through structured writing assignments submitted online. This form of intervention can improve symptoms of PTSD, anxiety, depressed mood, and grief across different cultures.<sup>76,77</sup>

## Recommendations for practice in the Middle East

Firstly, in the immediate term, short courses should be provided for primary care professionals so they can detect and treat mental illness and refer to specialist services. Longer term, undergraduate medical curriculums need increased emphasis on mental health and formal training for practising medical practitioners.<sup>80</sup>

Secondly, mental health professionals should train paraprofessionals, teachers, social workers, and other community workers in first level responses to strengthen children's coping strategies and resilience and to recognize those who need specialist interventions. Ideally, these professionals would themselves receive mental health support.

Thirdly, mental health professionals should be trained and supervised to implement level two interventions. Capacity building should be tailored to community and specialist levels, and an interdisciplinary context is needed to promote joint working,

networks, and efficient use of resources.<sup>81</sup> The particular social, cultural, and religious contexts in the Middle East should be taken into account.

Finally, a long term goal should be to upgrade and integrate mental health services across the health sector.

### Recommendations for research in the Middle East

Research on child mental health, especially on interventions, has been underprioritized in Middle Eastern countries. Research examining specialist second tier interventions targeting children most at need specific to Middle Eastern contexts is currently lacking.

Policy makers and researchers should prioritize assessing prevalence, needs, and mechanisms to establish the amount of psychosocial support needed and shape planning. Accurate data on mental health resources, use, and expenditure in conflict affected Middle East settings are lacking. War torn populations are usually hard to access and screen for mental health disorders. More data are needed to evaluate national mental health intergration programmes such as those established with WHO's support.

Traditional paper based data collection is often difficult. Mobile phone based data collection, access to services, and interventions have had positive effects, such as in screening Palestinian children to enable timely intervention for children with psychopathology.<sup>82</sup>

Mental health literacy campaigns could assuage the concerns about stigma that deter participation in studies.<sup>83</sup> Extending assessment to positive psychosocial functioning, coping strategies, and other indicators of resilience could also encourage participation.

Screening should use mixed methods to capture comprehensive psychosocial outcomes. Research tools and interventions may need culturally adaptation to Middle Eastern contexts, including language translation, piloting, culturally appropriate analogies, and focus group discussions with children, parents, teachers, and other stakeholders to co-design programmes and tools that match communities' needs.<sup>6,84</sup> Tools and interventions should be contextualized to marginalized groups, including women and girls, disabled people, and developmentally delayed children.

Finally, research findings in the Middle East are mostly based on cross sectional studies, assessing mental health problems at one point in time. More longitudinal studies are needed, as they can assess the effects of prolonged trauma and toxic stress over time and generations.

#### Key recommendations

- Continuous and prolonged war trauma exposure in conflict areas in the Middle East affects children's development and mental health. Psychosocial interventions need to focus on building children's resilience and coping strategies and progress to more focused service provision for those who remain symptomatic
- The development of mental health problems can be mediated by multiple stressors, including parenting, parental wellbeing, and economic hardship. These need to be taken into account when designing multimodal interventions
- Instruments and interventions need to take into account the social, cultural, and religious contexts in the Middle East
- Research and practice barriers in the Middle East such as stigma, limited transportation, costs, and mental health services should be taken into consideration
- Middle Eastern countries that are affected by war and recurrent conflicts largely lack skilled mental health resources. Alternative plans could include training of paraprofessionals and frontline professionals

on trauma focused, resilience, and coping strategies and interventions.

- Use of mobile mental health resources and digital technologies could be maximized
- The Middle East lacks planned, sufficient, and integrated mental health services. Policy makers should integrate mental health services building and development in the health care system plans and policies.

Contributors and sources: MS has expertise on developmental psychopathology investigating mental health in children of war, refugees, premature children, and bullying. SH is interested on the interplay between genetics and environment and its effects on the development of children. PV has developed and evaluated interventions and services for vulnerable children, especially in low income countries. BE-K is interested in developmental psychopathology specially anxiety, PTSD, and depression in children of war. NA-D's expertise is on molecular and human genetics. MS initiated this article. All authors contributed to the conceptualization of the article. MS and SH wrote the first draft of the manuscript. All authors critically reviewed and approved the final manuscript. MS is the guarantor of this article.

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