



The Effects of Armed Conflict on Children

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More than 1 in 10 children worldwide are affected by armed conflict. The effects are both direct and indirect and are associated with immediate and long-term harm. The direct effects of conflict include death, physical and psychological trauma, and displacement. Indirect effects are related to a large number of factors, including inadequate and unsafe living conditions, environmental hazards, caregiver mental health, separation from family, displacement-related health risks, and the destruction of health, public health, education, and economic infrastructure. Children and health workers are targeted by combatants during attacks, and children are recruited or forced to take part in combat in a variety of ways. Armed conflict is both a toxic stress and a significant social determinant of child health. In this Technical Report, we review the available knowledge on the effects of armed conflict on children and support the recommendations in the accompanying Policy Statement on children and armed conflict.

INTRODUCTION

More than 1 in 10 children worldwide are affected by armed conflict.¹ Combat activities and population displacement caused by conflict have direct effects on child mortality and morbidity. In addition, there are long-lasting indirect effects that are mediated by complex political, social, economic, and environmental changes. In 2015, there were 223 violent conflicts, of which 43 were limited- or full-scale wars.²

The nature of war has changed. Combat zones are increasingly widespread, weapons cause destruction on a larger scale,^{3,4} conflicts are more protracted (waxing and waning over lengthier periods of time),⁵ and the availability and use of small arms facilitates the use of children as combatants.⁶ These changes have led to geographically widespread, complex, and nuanced effects on children's physical, developmental, and mental health and wellbeing. Furthermore, the effects of armed conflict continue long after hostilities have ceased. Unexploded ordnances, such as landmines and cluster bombs, result in injuries and death for

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Dr Kadir identified the need to write this Technical Report, conducted the literature review to support it, and wrote the first draft; Dr Shenoda identified the need to write this Technical Report, conducted the literature review to support it, and contributed to revisions; Dr Goldhagen contributed to revisions; Mr Pitterman contributed to revisions and the figure; and all authors approved the final manuscript as submitted.

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This Technical Report does not reflect the views of United Nations High Commissioner for Refugees.

DOI: <https://doi.org/10.1542/peds.2018-2586>

To cite: Kadir A, Shenoda S, Goldhagen J, et al. The Effects of Armed Conflict on Children. *Pediatrics*. 2018;142(6):e20182586

decades after combat has ended.⁷ Similarly, the adverse effects of population displacement, the destruction of health systems and social infrastructure, environmental damage, and economic sanctions may compromise children's access to basic necessities, such as food, health care, and education, for decades. As a result, even short-lived armed conflicts affect child health and wellbeing across the life course and through adulthood.

The rules of war have also changed. Schools, which have been traditionally safe places, are targeted, and children are often attacked while on their way to or from school.^{8,9} In many armed conflicts, schools and educational facilities are used by combatant forces, including government forces, as bases for combat and to recruit children.^{8,9} The result is reduced school enrollment, high dropout rates, lower educational attainment, poor schooling conditions, and the exploitation of children.^{9,10} Similarly, attacks on both government and nongovernmental health facilities and mobile clinics are increasingly prevalent.¹¹ These attacks violate the Geneva Conventions¹² and result in the death of patients and health workers, the destruction of health infrastructure,¹¹ and increasing barriers to care because of people's fear of being injured or killed while seeking treatment.¹¹

DEFINITION OF ARMED CONFLICT

For the purpose of this Technical Report and the associated Policy Statement,¹³ armed conflict is defined as any organized dispute that involves the use of weapons, violence, or force, whether within national borders or beyond them, and whether involving state actors or nongovernment entities. Examples include international wars, civil wars, and conflicts between other kinds of groups, such as ethnic conflicts and

TABLE 1 Timeline of International Agreements and Treaties Protecting Children and Medical Personnel From Armed Conflict

Year	Agreements and Treaties
1948	Universal Declaration of Human Rights
1949	The Geneva Conventions I–IV: The Geneva Conventions comprise 4 treaties and 3 protocols that regulate the conduct of armed conflict. Together, they form the basis of international humanitarian law. Aspects of the conventions of particular relevance to child health include the protection of the wounded and the sick, health and public health personnel, and humanitarian aid; the protected status of health facilities; the free passage of essential food, clothing, and medical supplies to the civilian population; and the protection of children who are orphaned or separated. ¹²
1951	The UN Convention Relating to the Status of Refugees: The UN Convention Relating to the Status of Refugees (1951) and the Protocol Relating to the Status of Refugees (1967), known collectively as the Refugee Convention, are the foundation for the protection of refugees in international law. The convention defines the term refugee and establishes specific rights of refugees and the obligations of states for the provision and protection of these rights. Because people who are internally displaced have not crossed an international border, they do not fall under the protection of the Refugee Convention. However, people who are internally displaced retain all their rights and protection afforded under human rights and international humanitarian law. ^{16,17}
1959	UN Declaration of the Rights of the Child
1967	UN Protocol Relating to the Status of Refugees
1977	Protocols I and II of the Geneva Conventions
1989	UNCRC: After the adoption of the Universal Declaration of Human Rights in 1948 and in recognition of the special need for protection of children, the UN adopted the Declaration of the Rights of the Child (1959). The declaration forms the basis for the UNCRC (1989), which is a legally binding treaty in which 40 substantive rights of children are established. Particular attention is given to children who are affected by armed conflict, setting out a basic minimum standard for their care and the promotion of their health and wellbeing. This includes the right to protection from violence and sexual exploitation; the right to freedom of thought and education, health services, and welfare services; and specific rights of children who are refugees, separated, and unaccompanied. ^{14,15} In 2000, the Optional Protocol on the Involvement of Children in Armed Conflict was adopted and aimed at preventing children <18 years old from being recruited for or taking part in hostilities. ¹⁸
	¹⁹ The United States ratified the optional protocol in 2002 but remains the only country that has not ratified the UNCRC.
2000	Optional Protocol to the UNCRC on the Involvement of Children in Armed Conflict

violence associated with narcotics trafficking and narco-gang violence.

HISTORICAL AND LEGAL CONTEXT

Several legal declarations and treaties protect the health of children and health workers and preserve access to health care during armed conflict. The most important of these include the Geneva Conventions (1949), the United Nations (UN) Refugee Convention (1951) and 1967 Protocol, and the United Nations Convention on the Rights of the Child (UNCRC) (1989) with its accompanying Optional Protocol on the Involvement of Children in Armed Conflict (2000; Table 1). According to international law, the involvement of children in armed

conflict and the targeting of health workers and facilities by combatants are human rights violations. Of particular relevance is the UNCRC, a legally binding treaty in which 40 substantive rights for children are outlined and grouped into 3 categories: protection, promotion, and participation (Table 2). Specific child rights include protection from violence and sexual exploitation, freedom of thought, education, health services, welfare services, and specific rights of children who are refugees, separated, and unaccompanied.^{14,15} The United States remains the only country that has not ratified the UNCRC.

To strengthen the legal protection of children during armed conflict, the Optional Protocol to the UNCRC

TABLE 2 Summary of Key Articles of the UNCRC in the Areas of Protection, Promotion, and Participation

Articles	Rights
Rights of Protection: Keeping Safe From Harm	
6	Right to life
9	Right not to be separated from parents
19	Right to be protected from all forms of abuse
20	Right to special attention (eg, adoption and fostering if deprived of family)
32	Right to be protected from economic exploitation
33	Right to be protected from illicit drugs
34	Right to be protected from all forms of sexual exploitation
Rights of Promotion: Life, Survival, and Development to Full Potential	
24	Right to the highest standard of health care
27	Right to a standard of living adequate for a child's physical, mental, spiritual, moral, and social development
Rights of Participation: Having an Active Voice	
7, 8	Right to an identity (name, family, and nationality)
12, 13	Right to express views freely and be listened to
17	Right to have access to information
23	Right for children who are disabled to enjoy life and participate actively in society

was adopted by the UN to prevent children younger than 18 years old from being recruited into or participating as combatants in hostilities.¹⁸ In the optional protocol, 16 years old is established as the absolute minimum age for voluntary recruitment, and signatories are required to take all feasible measures to ensure that 16- and 17-year-old members of the armed forces do not take part in hostilities. The optional protocol was ratified by the US Senate in 2002.²⁰ The United States has also passed a law stipulating that 16-year-old children may not enlist and specifying that the voluntary enlistment of 17-year-old children requires the consent of a parent or guardian.²¹ Furthermore, as of 2007, US policy has been that 17-year-olds may not be deployed to combat zones.

The UN has identified 6 categories of human rights violations against children, known as the 6 grave violations. These violations include the killing and maiming of children, the abduction of children, the recruitment or use of children as soldiers, sexual violence against children, attacks against schools or hospitals, and the denial of humanitarian access.²² The first 4 are direct acts of violence against children, and the last 2 are indirect

actions that cause harm to children and directly relate to health care and health workers. The commission of any of these violations constitutes a breach of international humanitarian law.²²

GLOBAL BURDEN OF ARMED CONFLICT ON CHILD HEALTH

Armed conflict is a public health issue.²³ An estimated 246 million children live in areas affected by conflict (Fig 1).^{1,24–26} Forced displacement is at a record high: more than 68.5 million people, including 28 million children, are currently living as refugees, asylum seekers, stateless people, or internally displaced people (see Table 3 for definitions).^{27–31} Of the world's 25 million refugees, half are children: nearly 1 in 200 children across the globe.^{27,30} The authors of the 2005 State of the World's Children report, "Childhood Under Threat," suggested that 90% of conflict-related deaths from 1990 to 2005 were civilians, many of whom were children.³²

However, the precise effect of any given armed conflict on child health is difficult to determine.^{34–36} Conflicts disrupt the health information systems that report

morbidity and mortality under typical circumstances.²³ As a result, most published estimates of the population health effects of armed conflict are based on media reports and official pronouncements from governments and combating parties, which may politicize or intentionally misrepresent information.^{23,37} Deaths are also difficult to verify, and this may lead to underestimation. For example, in a report by the UN special rapporteur on children and armed conflict, it was estimated that thousands of children had died in the Syrian conflict in 2015.³⁸ However, only 591 child deaths were verified by the UN, which accounts for barely 0.01% of the 50 000 deaths that other analysts had estimated to have occurred during that year.^{2,34} Other problems in estimating the child health impact of armed conflict include the near absence of population-level data on morbidity and the tendency to aggregate child and adult data. As a result, there are no pooled estimates for the total number of children killed, injured, orphaned, handicapped, and/or psychologically traumatized by exposure to armed conflicts.

Given the challenges described, it is not surprising that there are few prevalence studies on the indirect causes of mortality or morbidity among children affected by armed conflict. Most of the literature is in the form of case reports in which researchers describe the type and distribution of injuries treated or smaller studies on communicable disease transmission, perinatal health, nutrition, or environmental contamination. Nonetheless, it is clear that the conditions created by armed conflict (social determinants of health, such as population displacement, the destruction of infrastructure, and the deterioration of health and public health systems) significantly increase childhood mortality and morbidity. Although

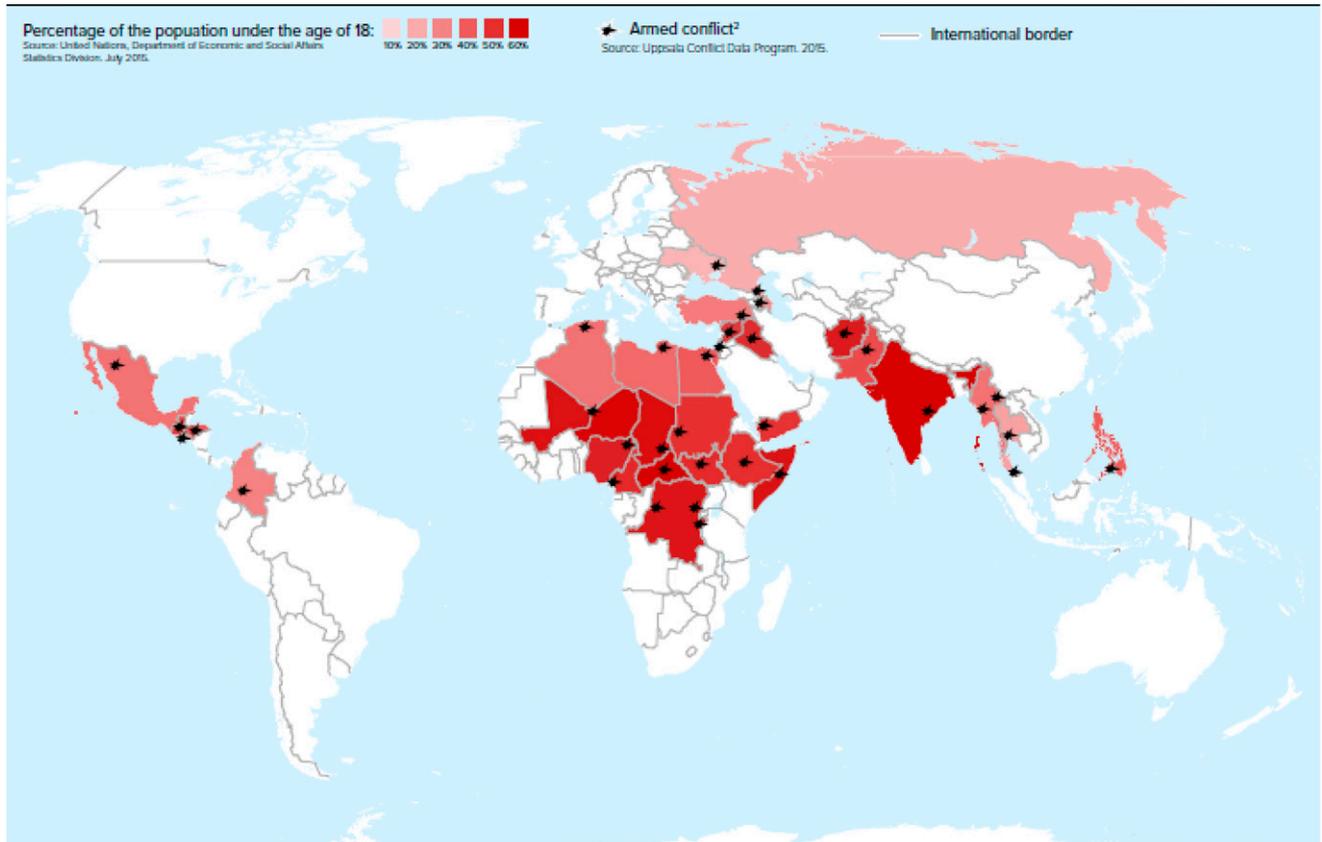


FIGURE 1

Children living in countries affected by armed conflict. Percentage of the overall population <18 years of age in countries affected by armed conflict, which is defined as any organized dispute that involves the use of weapons, violence, or force, whether within national borders or beyond them, and whether involving state actors or nongovernment entities. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). *World Population Prospects: The 2015 Revision*. Source: Melander, Erik, Thérèse Pettersson, and Lotta Themnér (2016) *Organized violence, 1989–2015. Journal of Peace Research* 53(5):727–742.

there are no studies in which researchers examine changes in the hypothalamic-pituitary-adrenal axis after exposure to armed conflict, it can be argued that the severity and chronicity of the stresses that children endure rise to the level of toxic stress³⁹ with its well-documented impact on physical and mental health across the life course.

Data on neonatal and infant health can provide insight into how the conditions created by armed conflict indirectly affect children's health. In conflict zones, there are higher rates of stillbirth, low birth weight, preterm birth, and perinatal mortality than during peacetime or in peaceful areas of the same country.^{40–42} Mortality

rates in infants and children younger than 5 years old are also higher in areas affected by conflict when compared with prewar data or data from peaceful areas of the same country.^{43–45}

Health facilities and health workers are increasingly becoming casualties of armed conflict, including targeted attacks. Reports from Syria, Yemen, Afghanistan, Nigeria, and Pakistan offer just a few examples.^{46–48} In 2014, 603 health workers were killed and an additional 958 were injured in attacks in 32 countries.⁴⁹ The trend has become so common that the World Health Organization has developed a monitoring system to track these attacks and their effects.⁴⁹

EFFECT OF ARMED CONFLICT ON CHILDREN'S PHYSICAL HEALTH

Direct Effects of Combat on Child Health

The kinds of injuries children sustain from armed conflict vary depending on the nature of combat, with all age groups being affected. In Iraq and Afghanistan, the most common forms of war trauma in children are blast and bullet injuries.⁵⁰ Blast injuries are caused by explosions and result in shockwave and shearing injuries, penetrating trauma, burns, crush injuries, and contamination injuries from the explosive device or environment.⁵¹ Children suffering from blast injuries usually present with multiple injury sites and types. Burns and severe head and neck

TABLE 3 Selected Definitions

	Definition
Armed conflict	Any organized dispute that involves the use of weapons, violence, or force, whether within national borders or beyond them, and whether involving state actors or nongovernment entities
Asylum seeker	A person who seeks safety from persecution or serious harm in a country other than his or her own and awaits a decision on the application for refugee status under relevant international and national instruments; in case of a negative decision, the person must leave the country and may be expelled, as may any nonnational in an irregular or unlawful situation, unless permission to stay is provided on humanitarian or other related grounds ³¹
Internally displaced people	People or groups of people who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or to avoid the effects of armed conflict, situations of generalized violence, violations of human rights, or natural or human-made disasters and who have not crossed an internationally recognized state border ³¹
Refugee	A person who “owing to well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group, or political opinions is outside the country of his [or her] nationality and is unable or, owing to such fear, is unwilling to avail himself [or herself] of the protection of that country” ³¹
Social determinants of health	The circumstances in which people are born, grow up, live, work, and age and the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies, and politics. ³³
Stateless person	A person who is not considered as a national by any state under the operation of its law. As such, a stateless person lacks those rights attributable to nationality: the diplomatic protection of a state, no inherent right of sojourn in the state of residence, and no right of return in case he or she travels. ³¹

injuries, and particularly penetrating head trauma,⁵² are the most common and the most lethal.⁵³ This pattern differs from blast injury in adults, who more often suffer injuries to the extremities.⁵³ The high prevalence of penetrating trauma sustained by children in combat zones also differs markedly from pediatric trauma in the United States, where blunt trauma is more common and mortality is significantly lower.⁵⁴

Pediatric trauma patients in combat zones have high mortality rates, which are likely attributable to both the severity of the injuries sustained as well as barriers in accessing adequate and timely care.⁵⁴

Chemical warfare has been documented in numerous conflicts dating back to World War I.^{55–58} Despite international law banning the development, stockpiling, and use of chemical weapons,⁵⁹ reports of the continued use of these weapons

against civilian populations have been issued as recently as May 2018.⁶⁰ Children are thought to be at higher risk of toxicity from chemical weapons because of their smaller mass, higher respiratory rate and minute volume, smaller airway diameter, lower fluid reserve, lower seizure threshold, and more limited cardiovascular stress response when compared with adults.⁶¹

Estimates suggest that the prevalence of rape and sexual exploitation of children in armed conflict is increasing.⁶² In addition to the psychological trauma of sexual violence during armed conflict, girls who suffer rape are less likely than adults to seek medical attention and are at increased risk for sexually transmitted infections (STIs), pregnancy, obstetric or gynecologic complications (eg, vesicovaginal fistulas), and subsequent infertility.^{63,64} Boys also experience rape and

STIs, although they are less likely than girls to report these violations because of stigma.⁶⁴ Those who survive their experiences suffer from psychological trauma and often face stigma and exclusion when they return to their communities.⁶⁵ Children born of rape during armed conflicts are a population that requires special attention. Girls who become pregnant as a result of rape may have ambivalent feelings toward their children, and the children may not be accepted into their communities.⁶³

Environmental Hazards

Armed conflict creates environmental hazards that continue to affect children long after hostilities have ended. Landmines and unexploded ordnances pose a major risk for death and disability for decades.⁷ Studies from Afghanistan, Eritrea, Laos, and Nepal revealed that children accounted for approximately half of all injuries caused by explosive remnants of war.^{66–70} Children are most likely to sustain injuries to the upper extremities, face, and torso.^{67,71,72} These injury patterns are seen because children are most often injured while playing, tampering with an explosive device, or performing economic activities, such as herding livestock.^{66–68,73,74} Chemical weapons and other chemical contaminants can also have long-term effects. A recent systematic review and meta-analysis of the association between Agent Orange and birth defects in Vietnam revealed that children born to individuals who had been exposed to Agent Orange were nearly twice as likely to have birth defects than children of individuals who were unexposed.⁷⁵ The destruction of buildings, water supplies, wastewater systems, factories, fuel stations, and farms has been shown to limit access to potable water and sanitation and release infectious and chemical contaminants into the air, water, and soil.⁷⁶ The long-term effects of these

hazards on child health have not been well studied.

Damage to Health and Public Health Infrastructure and the Targeting of Health Facilities

The destruction of health care and public health systems is a major cause of morbidity and mortality in children affected by armed conflict. Children, especially those younger than 5 years old, bear the highest burden of indirect conflict-related death.^{77–79} Lower respiratory tract infections, diarrhea, measles, malaria, and malnutrition are among the leading causes of mortality in children in conflict-affected areas.^{9,80}

The deterioration of health systems during armed conflict is characterized by the destruction of physical infrastructure, disruptions in supply chains, and the diversion of state funds from health to the military.^{9,81–84} Health workers and health care facilities are increasingly targeted by combatants, resulting in the killing and flight of the health workforce.⁸⁵ In some recent instances, military operations have been conducted under the guise of public health services, thus undermining local trust in health workers and placing health teams at risk for attack.⁸⁶ Families may be increasingly reluctant to seek medical care at both formal and informal health facilities,⁸⁷ fearing that children in the facilities will be targeted by attacks.^{81,83} Sieges, snipers, and active fighting may also prevent families from traveling to health facilities.

The conditions created by armed conflict compromise key public health functions, including vaccine delivery, health surveillance, and disease outbreak investigation,^{82,88} resulting in increased rates of infectious disease transmission.⁸⁹ Previously eradicated, vaccine-preventable diseases may reemerge in conflict-affected areas, as evidenced by an outbreak of polio

in the Syrian Arab Republic in 2013.^{89,90} Similarly, there is a clear relationship between violent conflict and the incidence of HIV and/or AIDS, tuberculosis, and malaria.⁸⁹ Countries experiencing high levels of armed conflict or political terror are also vulnerable to other diseases associated with crowding, population displacement, and lack of access to health care, such as the neglected tropical disease leishmaniasis.⁸² Indeed, there is a direct dose-response relationship between the intensity of violent conflict and the incidence of cutaneous and visceral leishmaniasis.⁸²

Food may be used as a weapon of war, and the effect of food insecurity on child health is exacerbated by the destruction of health and public health programs used to target malnutrition. Attacks on crops and livestock, food stores and shops, and transport links compromise the food supply during periods of conflict, and infrastructure and agriculture may require years to recover after the cessation of hostilities.^{9,77,91} Children in conflict and humanitarian settings have high levels of moderate and severe acute malnutrition, anemia, and other nutritional deficiencies.^{77,92–94} For example, a report on South Sudanese refugee children living in camps in Ethiopia described global acute malnutrition rates of 25% to 30% in children 6 months to 5 years of age with a severe acute malnutrition prevalence of 5.7% to 10%.⁹³

Forced Displacement

Displacement, whether within the borders of the country or across international boundaries, carries with it specific health risks and needs that are influenced by conditions before the journey, during travel, and in the place of arrival.^{95–97} Low-income regions host 85% of refugees worldwide.²⁷ Children who are forcibly displaced have more limited access to health care and basic

services when compared with local populations even in countries with longstanding refugee resettlement programs.^{98–100} In addition, children who are forcibly displaced often lack access to other basic needs, such as food, potable water, adequate sanitation, and education.⁹ Crowding of people who are displaced in camps and urban areas has been associated with outbreaks of cholera and other communicable diseases.^{84,101} Disruptions in immunization programs and a simultaneous worsening of sanitary and living conditions are associated with outbreaks of vaccine-preventable diseases, such as measles, meningitis, and pertussis.⁸⁴ Children who are displaced are at high risk for trafficking, violence, and exploitation, including sexual violence, labor, detention by government authorities, xenophobic attacks from the general public, bullying in schools, and domestic violence.³⁰ Half of primary school-aged children who are refugees and 75% of adolescent refugees are out of school.¹⁰²

EFFECT OF ARMED CONFLICT ON CHILDREN'S MENTAL AND PSYCHOSOCIAL HEALTH

Exposure to armed conflict has social and psychological repercussions that endure long after the termination of hostilities.¹⁰³ As with physical health, postconflict mental health is dependent on multiple factors, including mental health status before the conflict, the nature of the conflict, exposure to stressors, and the cultural and community context.¹⁰⁴

Children who are affected by war have an increased prevalence of posttraumatic stress disorder (PTSD), depression, anxiety, and behavioral and psychosomatic complaints.¹⁰⁴ Pooled estimates from a systematic review of nearly 8000 children who were exposed to war revealed that the prevalence of PTSD is 47%, that of depression is 43%,

and that of anxiety is 27%, although rates are lower among children with more remote exposures.¹⁰⁵ Young children ages 0 to 6 years exhibit increased anxiety, fear, startling, attention seeking, temper tantrums, sadness, and crying as well as difficulty sleeping alone and frequent awakenings.¹⁰⁶ They are more likely to suffer psychosomatic symptoms, such as stomach aches and irregular bowel movements, and they demonstrate alterations in their play, which can become either more aggressive or more withdrawn.¹⁰⁶ Parental mental health has an important influence on the mental health of children affected by conflict, particularly in young children.¹⁰⁶ Adolescents with cumulative exposure to war events and those with PTSD resulting from war events have also been found to have significantly higher rates of substance abuse.¹⁰⁷

The mental health impact of displacement appears to vary depending on where children are resettled. Factors that negatively affect mental health and social wellbeing among children who are displaced in low- and middle-income countries (LMICs) include exposure to mass trauma and family violence,¹⁰⁸ displacement,¹⁰⁹ social isolation, loss of social status, and perceived discrimination.^{104,109} Among children who are resettled in high-income countries, risk factors for negative mental health outcomes include exposure to postmigration violence, multiple changes of residence in host countries, parental exposure to violence, poor financial support, having a single parent, and having a parent with a psychiatric disorder.¹¹⁰ Learning problems in these children have been associated with traumatic experiences, detention, barriers in communication, low expectations from teachers, bullying, and discrimination.¹¹¹

Protective influences on the mental health and social wellbeing of

children who are refugees in high-income countries include parental support and family cohesion, self-reported support from friends, self-reported positive school experience, and same-ethnic origin foster care.¹¹⁰ In LMICs, children who are displaced benefit from repatriation to their countries of origin once it is safe to do so.¹⁰⁹

SPECIAL GROUPS

Children Associated With Armed Groups

Children are recruited or forced to participate in armed conflict in many different ways, including as soldiers, cooks, domestic workers, porters, human shields, mine sweepers, gang members, and sex slaves.^{19,32,62,112,113} The number of children associated with armed forces and armed groups worldwide is unknown but is thought to run into the hundreds of thousands,¹¹³ suggesting a pervasive violation of the UNCRC optional protocol on the involvement of children in armed conflict.¹⁸ Children are recruited into armed conflict because they are easier to condition and control in part because their cognitive and social development is not yet complete.³² The description given by children released from the Lord's Resistance Army in Uganda and the Democratic Republic of the Congo provides insight into the harrowing process of turning a child into a soldier: newly abducted children are placed in strictly controlled environments, socially isolated, forced to deidentify with their families and communities, and made to develop new identities.¹¹⁴ To force the acquisition of these new identities, children may be required to kill members of their own families.^{19,32} A more recent phenomenon is the use of children as young as 8 years old to conduct suicide bombings.¹¹⁵ This phenomenon has a disproportionate impact on girls, who constitute up

to 40% of children associated with armed groups¹¹⁶ but three-quarters of child suicide bombers.¹¹⁵

Children who were associated with armed groups experience particular physical, developmental, and mental health risks; barriers in access to health services; and significant obstacles to social reintegration. In addition to physical injury and death, they are at high risk for HIV and other STIs, obstetric complications, and substance abuse.⁶⁴ Social isolation, loss of identity, and being forced to act in strictly defined gendered roles negatively affect mental health and can result in a disconnect between these children and their families and communities on return to civilian life.¹¹⁴ Abduction, younger age of conscription, exposure to violence, female sex, and community stigma are associated with PTSD, depression, anxiety, and hostility.¹¹³ Those who have lost parents and/or were involved in raping, injuring, or killing have worse mental health outcomes than those who have not.⁶² Children associated with armed groups display gendered differences in mental health outcomes, with girls being more likely to have anxiety, depression, and feelings of hostility than boys.¹¹² Protective factors for psychosocial adjustment include perceptions of respect, understanding, and acceptance from family members; social support; and educational and economic opportunities.^{113,117} Despite growing knowledge about their health risks and needs, children who were associated with armed groups continue to face social stigma and have limited access to treatment and rehabilitative care.^{32,64,113} Furthermore, states are increasingly arresting and detaining children who are perceived to be associated or potentially associated with armed groups,¹¹⁸ and these children are often held in conditions that violate their rights as articulated in the UNCRC and do not meet international standards for juvenile justice.¹¹⁸

Children Who Are Unaccompanied and Separated

Armed conflict separates children from their families, as evidenced by the increasing numbers of children fleeing conflict between both state and nonstate actors without parents or guardians. The number of children who are unaccompanied and separated who applied for asylum worldwide nearly tripled in 2015 to a staggering 98 400 children.²⁷ These children often do not possess official documents, making it challenging for authorities to identify their age, risks, needs, and rights to protection.¹¹⁹ Health workers may be asked to assess their age, but a lack of reliable methods and the use of arbitrary practices place these children at risk for inappropriate treatment by authorities.¹²⁰ When they are identified by authorities and brought into state care, children who are unaccompanied and separated may face migration detention, discriminatory treatment, long delays in family reunification (if reunification is possible), and limited access to health care, social services, and education.^{30,121} Health issues of particular concern include infections, nutritional deficiencies, and mental health problems relating to their traumatic experiences, particularly anxiety, depression, and PTSD.^{122–125} Their young age, lack of documentation, and subsequent barriers in access to care and protection place children who are unaccompanied and separated at a high risk for trafficking and exploitation even after they are in the care of responsible authorities in the destination country.¹²⁶ Of the nearly 90 000 unaccompanied minors who applied for asylum in Europe in 2015,¹²⁷ at least 10 000 have gone missing.¹²⁸

Children With Remote Exposure to Armed Conflict

Children who are not in close proximity to or are displaced by

armed conflict may also face health and social risks related to the conflict. News and media coverage of war and extreme violence events have been shown to increase PTSD symptoms among US school children.¹²⁹ Children of deployed US military personnel have higher rates of emotional and behavioral problems and substance abuse^{130,131} and are at a higher risk for physical abuse and neglect both during and after parental return from deployment.^{131–133}

INTERVENTIONS TO PREVENT AND MITIGATE THE EFFECTS OF ARMED CONFLICT ON CHILDREN

Many interventions have been undertaken by individuals, groups, and societies to protect children and treat those who have been affected by armed conflict. Despite a wealth of experience, few studies have been conducted, and the evidence base for interventions used to prevent and mitigate the effects of conflict on children remains limited.

Interventions to Protect and Promote Physical Health

Children who are affected by armed conflict require care from clinicians who are familiar with their health risks and needs and who are skilled in providing care to children from different cultural and language backgrounds. There is some evidence for a positive effect of cultural competence training on patient outcomes.¹³⁴ Conversely, studies on migrant health have revealed that providers' lack of familiarity with migrant health conditions and health determinants can negatively affect the effectiveness of care.^{135,136} In some settings, medical interpreters serve in a dual role of language mediators and cultural mediators; they translate between languages and also identify and explain health concepts and cultural needs that are relevant to the encounter and the care of the patient. The use of

professional interpreters improves the quality of translations,¹³⁷ reduces unnecessary diagnostic investigations and treatments,¹³⁸ reduces the cost of care, and increases patient satisfaction.^{139,140} The use of informal or untrained interpreters has been found to be detrimental to care.¹³⁹

Disaster training courses are available for clinicians in the United States. These courses can be useful for providers who work in conflict settings as well as for general pediatricians who are involved in the care of children who are refugees and children who are remote from armed conflict.^{141,142} Such courses can assist providers in understanding the context-specific health needs of children, the management of chronic conditions, and the care of children with special health care needs in conflict and postconflict settings.

Child-focused nongovernmental organizations, multilateral international organizations, and the US military have a wealth of experience in trauma-informed care.^{131,143–146} Providing trauma-informed care involves making specific alterations in the care setting and the delivery of care that take into account the traumatic experiences of patients and caregivers and the way trauma has affected them.¹⁴⁷ Promoting the participation of children and their caregivers in their health care provides them with a sense of control over their situations, which is critical to promote healing and avoid exacerbating or causing further trauma.¹⁴⁸ Measures such as the creation of child-friendly spaces, communicating with the help of trained cultural mediators, the use of play in care provision, and informing children and their caregivers of what will take place during health care visits can alleviate fear, promote mutual trust, and ultimately improve care, follow-up, and adherence to therapy.^{139,148,149} Simple measures such as asking the patients what

would make them most comfortable during consultations, leaving the door slightly ajar when feasible, or allowing the patients to sit closer to the door may alleviate feelings of powerlessness or imprisonment.¹⁴⁸

The use of child-friendly spaces can be adapted to the medical home model for the provision of trauma-informed care in the United States. Child-friendly spaces are defined by the UN Children's Fund as spaces that "support the resilience and wellbeing of children and young people through community-organized, structured activities conducted in a safe, child-friendly, and stimulating environment."¹⁵⁰ Such spaces, whether they are in schools, community settings, or health facilities, are specifically adapted to meet the needs of children. They may include colorful decorations directed toward a child audience, toys and child-sized furniture, and relevant equipment that is designed for use by children. The use of child-friendly spaces is one approach to mitigate traumatic stressors while addressing the physical, psychological, and behavioral health needs of these children.

In addition, pediatricians caring for children who are affected by conflict often find that it is important to recognize the health needs of caregivers and families, facilitate access to care when necessary, and ensure that children and their families have access to relevant social and legal assistance. This is consistent with guidance from the American Academy of Pediatrics, which states that children should have access to care in a medical home that is "continuous, comprehensive, family centered, coordinated, compassionate, and culturally effective."¹⁵¹ In a study of the feasibility of using a medical home model in children with special health care needs (60% of whom had ≥ 5 medical problems and $>40\%$ of whom were dependent

on technology), researchers found that the medical home model was feasible with dedicated primary care leadership, adequate financial resources, cultural and language expertise, and family buy-in.¹⁵² As a population with special health and social care needs, children who are affected by armed conflict and their families stand to benefit from the trauma-informed services of a pediatrician housed in a compassionate medical home.

Interventions to Protect and Promote Mental Health

Psychosocial interventions are used during complex humanitarian emergencies to restore stability in the lives of children who are affected by armed conflict.¹⁵³ This is achieved by establishing routines and engaging young people and their caregivers in activities to support the wellbeing of the community. In postconflict environments, this may be accomplished by rebuilding homes, schools, and health care centers.¹⁵³ In settings that are remote from conflict, such as asylum centers, this is accomplished by reuniting families, providing them with their own shelters, and enrolling children in school.¹⁵⁴ The use of child-friendly spaces for psychosocial and educational interventions has been successful in promoting child mental health both during and after conflict.¹⁴⁹

Psychosocial interventions have been used successfully to complement psychiatric interventions in children with diagnosed mental illnesses.¹⁰³ Coordinated psychosocial and mental health interventions in schools have been found to be beneficial, especially in LMICs.^{103,155–157} School-based programs help children overcome difficulties that are associated with forced migration and positively affect self-esteem, motivation, and self-efficacy.^{155,156} Studies conducted with children who have experienced armed conflict universally reveal that

these children look toward education to improve their lives and futures.¹⁵⁸ In light of this and in consideration of the cultural stigma associated with mental illness,¹⁵⁹ providing mental health services in a school setting may be more socially and culturally acceptable.¹⁶⁰

In addition to addressing psychological trauma and promoting mental health in children who are affected by armed conflict, psychosocial and mental health programs are a means to promote resilience in children.¹⁶¹ Resilience is a positive adaptive process in the face of exposure to negative events or threats.¹⁶² Children who are affected by war often exhibit immense adaptability, which can be cultivated to mitigate the toxic stress effects of armed conflict. Intelligence, emotional regulation, and coping contribute to resilience and should be viewed as dynamic processes rather than as personal traits.¹⁶³ Factors that enhance resilience may include social support, caregiver mental health, membership in a religious community, cultural values, and access to child care and schools in war-affected regions.¹⁶³

Studies of resilience among children who are affected by war reveal the importance of context in the kinds of factors that are protective and how these factors influence resilience outcomes. Community acceptance has a protective effect on adaptive behaviors and mental health outcomes in children who have been associated with armed groups¹¹²; however, this effect has not been generally observed in other children who are affected by conflict.¹⁶⁴ Parental support has been associated with better school performance,¹⁶⁵ life satisfaction, and positive perceptions of health in 2 large cross-sectional studies of adolescents in the occupied Palestinian territories.¹⁶⁶ Among unaccompanied minors, well-supported living arrangements,¹²⁵ religious faith,¹⁶⁷ strong social

support systems, and healthy interpersonal relationships¹⁶⁸ have protective effects on mental health and adaptation to new environments. Researchers in studies of resilience provide insight into promising ways to protect and promote the wellbeing of children who are affected by armed conflict. However, interventions used to promote resilience should not be considered as a replacement for mental health interventions in children who are traumatized.¹⁶³

Public Health and Health System Interventions

In conflict zones and refugee settings, public health work is typically focused on rapid epidemiologic assessment, the development of early warning systems for infectious disease surveillance, and response to potential and actual outbreaks of infectious diseases.⁷⁷ In addition, in public health responses, disease prevention, including vaccination campaigns, the establishment of sanitation systems and potable water supplies, and mass food distribution, is prioritized.^{77,169} In cases of protracted displacement, the administration of routine vaccinations may also be implemented.¹⁷⁰

Other prevention measures include the establishment of surveillance systems to detect conflict- and displacement-related morbidity and the development of interventions to mitigate their effects on population health.⁷⁷ Supplementary feeding programs and targeted food distribution may be established in areas where there is a demonstrated burden of micronutrient deficiency or acute malnutrition.¹⁶⁹ Contingency planning and the training of frontline staff can be used to facilitate the early detection of disease and the implementation of needed interventions.⁷⁷ Finally, support may be provided to repair or improve the

capacity of existing medical facilities or establish new facilities.^{4,169}

Experience has shown that strong collaboration between the health sector and other sectors, including immigration, civil protection authorities, education, and nongovernmental organizations, results in a more effective management of complex emergencies and better health outcomes for people who are displaced and for receiving populations.¹⁷¹ On the basis of experience in work in Europe with the ongoing migration crisis and the US Centers for Disease Control and Prevention's Refugee Health Program, adequate preparedness also requires good health surveillance in sending, transit, and receiving countries and effective communication of this information to health care providers.^{171,172}

To inform clinical and public health preparedness and interventions, data on short- and long-term pediatric morbidity and mortality attributable to armed conflict are critical. Although several databases are used to track mortality directly from armed conflict, these do not include disaggregated data on children. There are numerous case reports and descriptive studies of child health outcomes in conflict settings that are used to help characterize specific groups, but these do not provide a broad or nuanced understanding of the effects of a given conflict on children. There is an urgent need to establish methods of data collection that can be used during armed conflict to monitor short- and long-term morbidity, mortality, and the effects of interventions.

CONCLUSIONS

Armed conflict is a neglected social determinant of child health, and the acute and chronic effects of armed conflict on child health and

wellbeing are among the greatest child rights violations of the 21st century. The destructive effects of conflict include all 6 grave child rights violations as well as a broad range of both direct and indirect effects that follow children through the life course and into adulthood. Despite the extraordinary number of children living in areas affected by conflict, our understanding of the scale of conflict's effects on children, the nuances of these effects, and ways to mitigate and treat them remain limited. It is incumbent on pediatricians, allied child health care providers, public health professionals, researchers, and policy makers to address the impact of armed conflict on children as a critical and priority issue. Children must be counted.

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ABBREVIATIONS

LMIC: low- and middle-income country
PTSD: posttraumatic stress disorder
STI: sexually transmitted infection
UN: United Nations
UNCRC: United Nations Convention on the Rights of the Child

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2018-2585.

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Pediatrics originally published online November 5, 2018;

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