# New ways to measure the effects of armed conflict in civilian populations

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The short-term and long-term effects of armed conflict on the health of women and children are poorly understood. Public health infrastructure is often underfunded or destroyed during conflict and health facilities are actively targeted by combatants. The resulting barriers in access to health care and data collection pose substantial challenges to our understanding of how and to what degree conflict affects civilian health and mortality.[1] Even estimates of mortality directly due to combat remain problematic, since they are based primarily on reports from combating parties, news media, and non-governmental organisations.[2] The scarcity of data on women of childbearing age in conflict settings is mirrored by the scarcity of data on child health (appendix p 1).[1]

The study by Zachary Wagner and colleagues[3] in *The Lancet Global Health*[3] sheds light on the overall scale of health and social effects of armed conflict on civilian populations in Africa and identifies some of the complexities in how these effects ultimately manifest. By comparing Demographic and Health Survey (DHS) data with conflict location and intensity, Wagner and colleagues were able to provide estimates of mortality in women of childbearing age and the likelihood of a child losing one or both parents on the basis of proximity to conflict and conflict intensity (from the Uppsala Conflict Data Program database). The methods are one concrete example of how existing data, such as those from DHS and the Uppsala Conflict Data Program database, can be used to examine population health in conflict settings.

The study findings provide evidence of the so-called collateral damage of armed conflict. They also provide evidence on some nuances in the way conflict affects health. Mortality was more pronounced for non-maternal causes of death, suggesting that additional factors beyond barriers in access to maternity care led to death in women of childbearing age. Further, education and wealth were associated with lower probability of orphanhood, suggesting that poverty and social inequities compound the risk of a child living near conflict zone losing a parent.

Contextual factors play an important role in shaping the way conflict affects a given population and they also shape the way in which interventions can be developed and carried out. For example, Iraq was previously a middle-income country with a functioning health system until two decades ago, when war, international sanctions, and civil unrest contributed to a substantial deterioration of the health system.[4] The health-seeking behaviour of the population is in keeping with the prewar standard, when specialised care, technologically advanced diagnostics and treatment, and frequent prescribing of medication and infant formula were widespread. Delivering health care in postconflict Iraq, using well known preventive strategies such as antenatal visits and promotion of breastfeeding, is challenged by a lack of acceptance by the population.[5]

Protracted conflict and limited capacity of the health sector in the Democratic Republic of the Congo has created major gaps in access to care, particularly for reproductive health and maternal and child health services. However, security issues continue to limit access for humanitarian actors, resulting in limited care and substantial gaps in data on short-term and long-term health outcomes even for those patients who receive care. The end result is a limited ability to understand the evolving health needs of the population or to deliver interventions for known and prioritised health needs.[6]

In Mexico, existing disparities in access to health care, in the form of barriers in access to care for native Indians, Afro-Mexicans, and internal migrants has been exacerbated by a surge in international migration. The additional burden in an already weakened national health system has fuelled racist discourse within Mexico and in the neighbouring USA. Further, a substantial proportion of the population is on the move, effectively invisible to health authorities and humanitarian actors. Sexual violence and access to treatment, including emergency contraception and HIV postexposure prophylaxis, is a recognised issue for both women from the local populations, as well as for migrants. Invisibility of the migrant population and the normalisation of violence in the local population has hindered their access to care. Although migrants might be visible during travel in large groups or caravans, they disperse

as they approach the Mexico–USA border, some falling under the control of cartels and others actively seeking to remain invisible to avoid danger or deportation. As a result of their invisibility, this population has limited or no access to the available care and our understanding of their health needs and risks remains very poor.[7–9]

The use of traditional research methods requires a degree of security and infrastructure that cannot be guaranteed in conflict settings. Available data are likely to be fraught with bias, missing data points, double counting, and other errors that might ultimately lead to inaccurate conclusions and misplaced or even potentially harmful interventions. There is a need to develop new, innovative research methods to improve the quality of data and, thereby, improve our understanding of the needs of specific populations, local context, and how it affects health needs and potential interventions. By supporting and collaborating with local networks of health workers, local non-governmental organisations, and international humanitarian organisations, we can improve data collection and develop contextually appropriate interventions. A paper by Meigari and colleagues,[10] published in 2017, from Syria, shows that data collection is feasible even in highly intense conflict zones with attacks on health care and sudden closure of health facilities. Technologies such as telecommunications and social media are potentially useful resources, although they pose ethical challenges and security risks that must be carefully considered. The need for better data and more effective, contextually appropriate interventions is clear. It is necessary to develop the methods to achieve this aim.

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We declare no competing interests.



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