

THE IMPACT OF CONFLICT ON HEALTH OUTCOMES: A SYSTEMATIC EVIDENCE FROM SUB-SAHARAN AFRICA

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Abstract

One of the greatest risks and challenges faced by the health of populations and systems in developing countries is conflicts. Sub-Saharan African countries have experienced various forms of violent conflicts which prompted this study to evaluate the health consequences of these conflicts. Online systematic search was conducted for relevant literature and this made it possible for studies that were peer-reviewed, research article, report, working paper, discussion paper and a briefing paper to be included in the study. The inclusion criteria were met by 12 studies, one each from Angola, Côte D'Ivoire, Eritria-Ethiopia, Liberia, Sierra Leone, Somalia and Uganda. Two studies were conducted in Nigeria and three in South Sudan. Three studies reported a negative effect of conflict on health facilities; two reported a negative effect on health workers while nine studies mentioned that conflict has a negative effect on child nutritional status. One and two other studies reported negative effects of conflict on maternal healthcare utilisation and mental health respectively. In general, conflict has negative effects on health outcomes. Among the studies selected for this review, children were mostly reported to have been affected by conflict. Most of them in conflict zones were found to have been undernourished due to conflict. The findings of this review have demonstrated that conflict has a negative effect on the health of the population.

Keywords: children, conflict, health, malnutrition, Sub-Saharan Africa

Introduction

The main aim of a public healthcare system is to avert avoidable morbidity and mortality (WHO 2000). However, when a city, town, a village or a country is engulfed in a conflict, be it political, civil, communal or religious conflict, the health system suffers a lot, and this puts the population in precarious conditions. Armed conflict is a direct threat to life (Singh *et al.* 2007; WHO 2000). Many lives of people around the world are trapped the vicious circle of armed conflicts and poor health (WHO 2000).

Conflicts cut across the globe and this has put the health system where these conflicts exist and the population under intense pressure. In Nepal, it was reported that the insurgency tagged the "People's War" negatively affected health programmes and health workers as compared to other sectors (Devkota 2005). While the armed conflict in Nepal had little effects on health facilities, in Yemen, the current armed struggle between warring factions has destroyed 274 health facilities (UN health agency 2017).

Conflict will inevitably bring loss of lives, physical bruises, widespread emotional distress, a worsening of existing malnutrition (specifically among children) and outbreaks of communicable diseases (WHO 2003). "Common, preventable diseases such as diarrhoea,

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threaten life. Chronic illnesses that can normally be treated lead to severe suffering. The dangers of pregnancy and childbirth are amplified”(WHO 2003:1).

In Africa, many countries have experienced at least one period of civil war(Elbadawi and Sambanis 2000). While different studies have investigated the health outcomes of these conflicts (Ityavyar and Ogba 1989; Østby *et al.* 2018; Wagner *et al.* 2018)None has used a systematic review to assess the impact of these conflicts on health outcomes in Sub-Saharan Africa. It is against this background that the current study has been conceived and it adopts a systematic review approach. The specific purpose of the study is to assess the effects of conflict on health outcomes in Sub-Saharan Africa. The rest of this study comprises the conceptual framework, materials and methods, the results, discussion and the conclusion.

Conflict: conceptual framework

“Conflict is as old as mankind” (Folarin 2015:2). It is a pertinent component of the human environment and people must fight even if they do not possess dangerous weapons within their reach (Folarin 2015). As Morgenthau stated, when there are no dangerous weapons to fight, people will fight with their bare hands (Folarin 2015). A point of contact is a point of conflict. Nicholson defined conflict as “when two people wish to carry out acts which are mutually inconsistent” (Nicholson 1992:11).

Most conflicts in Africa have been armed conflicts and are non-international armed conflicts. This is because these conflicts have existed and exist within territories. Armed conflicts are conceptualised as open, armed skirmishes between two or more centrally organised factions, with continuity between the skirmishes, in disagreements about power over government and territory (Smith 2004). The International Committee of the Red Cross (ICRC) defined non-international armed conflicts as the sustained armed disputes occurring between governmental armed forces and the forces of one or more-armed groups, or between such groups occurring on the territory of a State (ICRC 2008). The consequences of conflicts are enormous, that was why Richardson in his inquiries on war and violence introduced the concept “Deadly Quarrel” (Nicholson 1992:14). The concept refers to the negative consequences that emanate from any conflict (Nicholson 1992). Though there are various consequences of conflict, this study is interested in the health consequences of conflicts in Sub-Saharan Africa. The consequences of conflict and violence on public health can be categorised as either direct or indirect effects (Fürst *et al.* 2009). The direct effect is the physical harm to the human body such as injuries and killings (Fürst *et al.* 2009). On the other hand, indirect effects include individual (Goodhand 2003; Ibáñez and Vélez 2008)and combined socioeconomic losses (IANSAs, Oxfam, and Saferworld 2007), damaged infrastructure and Biosphere (Garfield *et al.* 1987), the interruption of public health systems (Garfield *et al.* 1987), social disorder, forced migration and displacement (Prothero 1994; Toole and Waldman 1997) and psychological trauma (de Jong *et al.*2000a; Igreja *et al.*2006).

Armed conflicts caused significant morbidity and mortality among combatants and non-combatants (Levy and Sidel 2016). Morbidity experience during conflict includes a variety of afflictions, from injuries to serious effects on mental health, some which extend for several years (Levy and Sidel 2016). People suffer considerable morbidity during, and in the aftermath of conflict because of destruction to the health-supporting infrastructure of society, such as procedures to provide healthy food and water, healthcare and public healthcare services, sanitation and hygiene, communication, transportation and energy supply (Levy and Sidel 2016).

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Materials and Methods

This review applies the steps in a systematic review process to assess the effects of conflict on the health of the population in Sub-Saharan Africa. These steps include the following: identifying the research question, defining the inclusion and exclusion criteria, search strategy, data extraction and data synthesis.

Search strategy

To identify eligible studies, I conducted a systematic review search online for English-language peer-reviewed articles, grey literature, reports available online and web articles. I used the following search terms to search for relevant literature, “conflict”, “health”, “armed conflict”, “civil conflict”, “Africa” and “Sub-Saharan Africa.”

Inclusion and exclusion criteria

I included studies in the systematic review if they reported at least any negative health impact due to conflict. This review included only English-language articles reporting on the effects of conflict on health outcomes. Peer-reviewed articles, grey literature and reports made up parts of the included studies. The review excluded studies that reported the likely health effects of civil and armed conflicts on the population.

Data extraction and analysis

A standard form was created for the extraction of data and the following data were extracted: the location of study, year of publication, types of studies, conflict types and health effects reported due to conflict. This review did not include a meta-analysis. This is because the included studies varied considerably in study design, settings and variables measured. Therefore, a narrative synthesis was used to present details of each included studies. This was after coding was used to identify salient information and themes derived.

Results

Study selection

Twelve studies reporting on different effects of conflicts on the population in 9 countries were included in the review. These studies were selected from a total of 260 possible important citations found during a comprehensive search for relevant literature (Figure 1).

Study characteristics

Table 1 outlines the key features of the included studies. The included studies were conducted in 9 Sub-Saharan Africa countries. Four of which were conducted in West Africa (Côte D’Ivoire, Liberia, Nigeria and Sierra Leone), three in East Africa (Somalia, South Sudan) and one in Southern Africa (Angola). The studies were published between the period of 2000 and 2018 and most of the articles are peer-reviewed, report, research article and with one each being briefing paper, discussion paper and working paper. The types of conflicts mentioned by the studies include civil war, armed conflict, violent conflict and international war. Malnutrition, trauma, health facility, health workers, mental health and maternal health utilisation are mentioned by these studies as the health effects of conflict on the population.

Health consequences of conflict

Health facility

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Attacks on health facilities have been reported in 3 studies (Doctors Without Borders 2014; Tran 2016; WHO 2016). In Angola, 65% of health facilities were destroyed during the conflict with most damage occurring in the rural areas (Tran 2016). The destruction of health facilities resulted in the limited access to healthcare which led to acute inequality of quality of life among children. In South Sudan, it was reported that the intensification of hostility led to a further interruption of health services and several health facilities in the nation's capital were destroyed (WHO 2016). This had a negative effect on medical supplies to victims of the conflict

and as well as limited access to healthcare services. Also, in South Sudan, the report from Doctors Without Borders reveals that in areas where violence has taken place, all hospitals were ransacked and looted, medical vehicles were stolen or damaged (Doctors Without Borders 2014).

Health workers

Two studies have found conflict effects on health workers in South Sudan (Doctors Without Borders 2014; WHO 2016). In Bentiu and Bor, health workers were killed, an NGO health worker was also killed in Akobo, Jonglei State (Doctors Without Borders 2014). While health workers were killed, others were harassed by the armed combatants. In Juba, attacks on health facilities led to health workers running helter-skelter for safety (WHO 2016).

Malnutrition

Children are the most vulnerable when conflict occurs. Of the 12 studies in this review, 9 reported on child malnutrition (Akresh *et al.* 2012; F; Dunn 2018; Howell *et al.* 2018; Kinyoki *et al.* 2017; Minoiu and Shemyakina 2012; Sonne and Nillesen 2015; Tran 2016; WHO 2016). In Angola, the Guerrilla warfare conflict funded by "blood diamonds" and aggravated by ethnic fissions resulted in malnutrition for children in rural areas (Tran 2016). The malnutrition was more visible in the rural areas where the conflict was severely affected (Tran 2016). In Côte D'Ivoire, data from three household surveys gathered before, during and after the 2002 to 2007 armed conflict indicated that children aged 6-60 month that resided in the conflict-affected zones had serious health challenges compared to those in less affected zones (Minoiu and Shemyakina 2012). The results of the study confirmed that both children in poor and non-poor households that were exposed to the conflict were negatively affected by losing on average 0.303-0.549 standard deviations in their height-for-age-Z-scores.

The Eritrea-Ethiopia international war exposed children in both countries to health complications as reported by Akresh *et al.* (2012). Using household survey data from both countries, the result stated that children born during or before the conflict and residing in a location of internally displaced people have significantly lower height-for-age Z-scores as a result of the conflict. The strength of the negative impacts varies from 0.77 to 0.89 standard deviations in Eritrea and 0.31 to 0.41 standard deviations in Ethiopia, substantial effects in contrast to the average Z-scores of children in non-conflict zones of both nations. The implication of the outcomes of the study is that children in Eritrea were more affected by the conflict than children in Ethiopia. In Liberia, mothers exposed to the 1989-2003 civil war had serious health implications on their children (Sonne and Nillesen 2015). The outcomes of the Liberian study show that the height-for-age Z-scores of children whose mothers resided in extreme violence zones were significantly lower (-1.58 vs. -1.29, $p=0.07$) compared to those in less-violence zones.

In Nigeria, two studies assessed the nutritional status of children in conflict areas. The first study used data from two Demographic and Health Surveys (DHS) to assess the impact of the Boko Haram insurgency on childhood wasting before and after the conflict started (Dunn

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2018). The findings of the study submit that *ceteris paribus* if children in the conflict areas had not been exposed to the conflict, their mean weight-for-height Z-scores would have been 0.49 standard deviations higher than it is ($p < 0.001$). On wasting, the findings indicate that *ceteris paribus*, wasting would have reduced by 13% points if the children had not been exposed to the conflict. The second study also used data from DHS and data from the Social Conflict Analysis Database. The outcomes of the study show a significant relationship between living close to a war zone and severe malnutrition among children in 2013 (Howell *et al.* 2018). The analysis of the study indicates that children in the urban areas have around 5% greater odds of being wasted for each conflict period. For the children in rural areas, their situation was more severe because they have odds ratios of 113 or 117 depending on the conflict measure. The findings did not unveil any significant relationship between mortality and conflict. In Somalia, data obtained from household surveys of children aged 6-59 months between 2007 and 2010 show that 15,355 (21%) and 22,739 (31%) children were wasted and stunted due to the armed conflict (Kinyoki *et al.* 2017). The implication of this is that the protracted conflict in Somalia is responsible for the under nutrition of 52% of the children observed in the study. However, the study did not fully capture data from household, individual and environmental variables to determine if the conflict was solely responsible for the under nutrition. Three studies reported on the effects of conflict on health outcomes in South Sudan, but only two reported on child malnutrition. The conflict in South Sudan has taken its toll on children. The Doctors Without Border reported having received reports of high rates of malnutrition amongst part of the population and it responded by admitting 2,101 under-five children and 2,142 children in a nutritional programme between 2013 and 2014 (Doctors Without Borders 2014). Similarly, UNICEF reported that the civil conflict in South Sudan put more than 685 children under the age of five in severe malnutrition and more than 230,000 were expected to face acute malnourishment, this according to UNICEF make children highly prone to give in to diseases (WHO 2016).

Maternal healthcare utilisation

One of the twelve studies that sourced its data from DHS in Uganda reported conflict effect on maternal health utilisation (Namasivayam *et al.* 2017). The conflict in Northern Uganda had a negative effect on women's maternal healthcare usage because the use of contraception and institutional deliveries were lower among the women in the predominant conflict zone in Northern Uganda. Nevertheless, the professional assistant (medical care) given to expectant mothers in the same conflict zone (Northern Uganda) was higher compared to the south of the country.

Mental health

According to two studies, conflict traumatised the health of the population (Amnesty International 2016; de Jong *et al.* 2000). In Sierra Leone, a psychosocial questionnaire was used to gather data from victims of the Sierra Leone civil war, it was discovered from a mental health survey that most respondents from all suburbs of Freetown had a high level of traumatic stress due to the conflict (de Jong *et al.* 2000). The results show that starvation (99%), witnessing wondered people (90%) and having lost someone (50%) were associated with the traumatic experiences of the respondents. The Impact Event Scale (IES) of the study reveals that 99% of the respondents had high levels of traumatic stress and Post-Traumatic Stress Disorder (PTSD). However, the outcomes of the IES should be treated with caution because the IES questionnaire was not certified for Sierra Leone and the cut-off scores given in the study report were based on West Europe data. On physical health, the findings of the study

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indicate that traumatic stress is associated with headaches (39%), body pains (12%) and the visit to health centres (42%).

In Juba, Malakal and Bentiu (South Sudan), findings from the study of Amnesty International from other studies reveal that 50% of respondents living in Southern Sudan and 44% of refugees of South Sudan origins living in Uganda suffered from PTSD due to the civil war (Amnesty International 2016). It was also established from the study that in 2007 high levels of mental distress was discovered among the population surveyed in Juba and in 2010, research found that among South Sudanese ex-combatants, “15% reported wishing they were dead or thinking about suicide” (Amnesty International 2016:17). Some victims revealed their experiences during the brutal conflict, “I hear a lot of noise at night. I dream that I am still in jail. I am haunted by the cutting of the stomachs of the victims. I wake up and I can’t go back to sleep” (Amnesty International 2016:29). “As I was running, I saw Nuer soldiers and one tried to shoot me. I saw people dead on the roads—men, women and children...The Nuer soldiers stopped us on the road to UNMISS and said, ‘Give money or mobiles, or we’ll shoot you” (Amnesty International 2016:23).

Other health consequences due to conflict

Aside from the mentioned effects of conflict on health, there are other health consequences due to conflicts mentioned by some included studies. In Angola, war-torn facilities were inadequately equipped to provide quality healthcare to the people (Tran 2016). In Sierra Leone, around 6,000 people were killed, 150, 000 displaced, and rebels amputated their victims’ arms, legs and ears (de Jong *et al.* 2000).

Due to the conflict in South Sudan, it was reported by the Ministry of Health that 162 cases of Cholera in Juba and Duk Counties were discovered (WHO 2016). Also, in South Sudan, it was reported that women and girls were raped, hospitals destroyed and humanitarian assistance (medical and food supplies) was prevented from reaching people displaced by the conflict (Amnesty International 2016).

Discussion

This study uses systematic review methods to assess the effects of conflict on health outcomes in Sub-Saharan Africa. Twelve studies were included in the review of the 260 studies that were initially sourced electronically online. The findings of the review show that armed conflict has huge negative effects on health outcomes. The findings are in consonance with other studies that have investigated conflict and health interface. For instance, In Iraq, the degradation of health status among Iraqis is linked with the deterioration of the country’s infrastructure due to the 1980-1988 war with Iran and the 1991 six-week Gulf War (WHO 2003). The two wars led to the destruction of health facilities and routine health service provision was obstructed and this prevented the treatment of people with protracted illnesses (WHO 2003). In Yemen, the escalation of the conflict has led to more than 7,600 deaths and close to 42, 000 injured in 2015, malnutrition rates have risen and around 462,000 children suffered from acute malnutrition and at the risk of life-threatening implications (UN health agency 2017).

Conflict effects on health infrastructure as reported by the findings of this review. In Angola and South Sudan, health facilities were targeted by combatants which resulted in the disruption of health services. Studies have shown that when conflict occurs health facilities become a target. In Syria, it was recorded that 185 health facilities were attacked by warring factions of the conflict 233 times and this has resulted in increased morbidity and mortality (Abbara *et al.* 2016). The destruction of transport facilities, communication and hospital due

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to conflict impair the health referral systems on which mothers and their children depend on their survival (Grundy 2001).

Children, girls and women are the most vulnerable in conflict because of their vulnerable positions in society (UN 2013; Wessells 2017). UNICEF data revealed the effects of conflict on the most vulnerable targets of armed conflict, women and children (Grundy *et al.* 2008). Among the ten highest under-5 mortality rates, seven (Afghanistan, Angola, Democratic Republic of Congo, Guinea Bissau, Liberia, Sierra Leone and Somalia) are all conflict or post-conflict countries (Grundy *et al.* 2008; Salama *et al.* 2004). Of the 12 included studies, 9 reported on a negative effect of conflict on children. Malnutrition was the main effect of conflict on children. In Angola, Côte D'Ivoire, Eritrea, Ethiopia, Liberia, Nigeria, Somalia and South Sudan conflicts had a severe consequence on child nutritional status. Most of the children in the conflict zones were malnourished. The findings are in agreement with the studies of (Wessells 2017; WHO 2003). In Iraq, the war witnessed over a decade is telling on the health of the population. For instance, between 1991 and 2002 severe malnutrition rates among children under the age of five in southern and central Iraq climbed to 11.0% in 1996 and dropped to 4.0% in 2002 (WHO 2003). In three northern governorates between 1996 and 2002, there was a 20% decrease in acute malnutrition, a 56% decrease in chronic malnutrition and a 44% decrease in the incidence of underweight children in the under-5 age group (WHO 2003). Nevertheless, the rates of chronic and acute malnutrition in children are higher now than before (WHO 2003). In war zones in Afghanistan, Chad, Central African Republic, Sudan and Syria there is evidence of agonies of children that need urgent intervention on behalf of the war-affected children (Wessells 2017). A thorough appraisal of the effect of the 1991 Gulf War on mortality rate believed that there are 111,000 civilian deaths from the "post-war adverse health effect", the greatest figure of casualties created by the war (Grundy 2008). "Of these deaths, 70,000 were children under the age of 15" (Grundy 2008:89).

Conflict disrupts the provision of health services to the population due to the destruction of health facilities and harassment of health workers (Devkota 2005). In Angola and South Sudan, major health facilities were destroyed by armed combatants who led to severe health problems for victims of the conflicts. This brought about huge health inequality among the population in Angola (Tran 2016). In the case of South Sudan, it was terrible because of the looting and burning of hospitals, destruction of medical vehicles and the killing of patients (Doctors Without Borders 2014). Medical and humanitarian staff were not spared by the rebels in South Sudan. Health and humanitarian workers were killed, and others were harassed and humiliated by combatants (Doctors without Borders 2014). These findings are not different from the findings of the study in Nepal, where health workers and health infrastructure were targeted by rebels (Devkota 2005).

The exposure to armed conflict has been frequently linked with an increased prevalence of mental illness (Londoño *et al.* 2012). Findings from this review confirmed that in Sierra Leone and South Sudan, armed conflicts increased the prevalence of mental illness among the people that witnessed the conflicts. For example, people that witnessed torture, execution, amputations, public rape and people being burnt in the houses in Sierra Leone had serious psychological stress (de Jong *et al.* 2000). The situation in South Sudan shows the levels of mental illness due to conflict. Most of the people interviewed showed severe mental illness among them. They gave the horrific tales they have been going through which inflict mental illness on them. Similar studies by the South Sudan Law Society (SSLS), the United Nations Development Programme and the African Union Commission of Inquiry on South Sudan (AUCISS) showed that conflict in South Sudan has taken a toll on the mental health of victims of the conflict and those who witnessed the atrocities that were committed by combatants (Amnesty International 2016).

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Among the included studies, only one reported on conflict and maternal healthcare utilisation in Uganda. The Uganda conflict affected the maternal healthcare utilisation in Northern Uganda, the epicentre of the conflict compared to Southern Uganda where it was much safer. Findings from this review revealed the negative effect of conflict on maternal healthcare. A unique aspect of the Uganda study is that professional assistance at birth was higher among women in the conflict zone due to international humanitarian staff that were on the ground providing humanitarian assistance (Namasivayam *et al.* 2017). This is also in agreement with the study of (Jolem 2016), whose findings indicate the South Sudan conflict had a negative effect on maternal healthcare in Magwi County. During a conflict, often, women of child-bearing age die in village homes from post-partum bleeding refused access to fundamental healthcare services (Grundy *et al.* 2008). In the decisive stage of hostilities against the Khmer Rouge in the mid-1990s in Cambodia, the mortality rate on the battleground was equivalent by the number of deaths of women in Cambodia villages from pregnancy-related causes (Grundy 2001).

This review came across some limitations that made it possible for some of the findings of this review to be treated with caution. Some included studies lack adequate data and only English articles were included in the study whereas there are other studies in other languages that have investigated the interface between conflict and health in Sub-Saharan Africa. Future studies are required to ascertain the level of effect of conflict on health outcomes in Sub-Saharan Africa.

Conclusion

This review assesses the effects of conflict on health outcomes in Sub-Saharan Africa. The findings of the review show that conflict negatively affects health workers, health facility, maternal healthcare utilisation, mental health and the nutritional status of children. Among the studies selected for the review, children were mostly reported to have been affected by conflicts. Most of them in conflict zones were found to have been undernourished due to conflicts. The findings of this review have demonstrated that conflict has a negative effect on the health of the population. The findings are in consonance with other studies that have investigated the correlation between conflict and health outcomes (Abbara *et al.* 2016; Wessells 2017; WHO 2003). While this review did not intend to fill any gap, rather it adds to the existing literature on conflict and health outcomes and the debate on the two concepts.

References

- Abbara, A., Blanchet, K., Sahloul, Z., Fouad, F., Coutts, A., Wasim, M., 2016. The Effect of the Conflict on Syria's Health System and Human Resources for Health. *World Health Popul.* 16, 87–95.
- Akresh, R., Lucchetti, L., Thirumurthy, H., 2012. Wars and child health: Evidence from the Eritrean–Ethiopian conflict. *J. Dev. Econ.* 99, 330–340.
<https://doi.org/10.1016/j.jdeveco.2012.04.001>

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- Amnesty International, 2016. The Mental Health Impact of South Sudan's Conflict. Amnesty International, South Sudan.
- de Jong, K., Mulhern, M., Ford, N., Kam, S. van der, Kleber, R., 2000a. The trauma of war in Sierra Leone. *The Lancet* 355, 2067–2068. [https://doi.org/10.1016/S0140-6736\(00\)02364-3](https://doi.org/10.1016/S0140-6736(00)02364-3)
- de Jong, K., Mulhern, M., van der Kam, S., 2000b. Assessing Trauma in Sierra Leone Psycho-Social Questionnaire Freetown Survey Outcomes. Médecins Sans Frontières, Amsterdam.
- Devkota, M.D., 2005. An Assessment on Impact of Conflict on Delivery of Health Services [WWW Document]. URL https://www.who.int/hac/crises/npl/sitreps/Nepal_public_health_program_8_july05.pdf?ua=1 (accessed 12.27.18).
- Doctors Without Borders, 2014. South Sudan Conflict: Violence Against-Healthcare. Médecins Sans Frontières, South Sudan.
- Dunn, G., 2018. The impact of the Boko Haram insurgency in Northeast Nigeria on childhood wasting: a double-difference study. *Confl. Health* 12. <https://doi.org/10.1186/s13031-018-0136-2>
- Elbadawi, E., Sambanis, N., 2000. Why are there so many civil wars in Africa? Understanding and preventing violent conflict. *J. Afr. Econ.* 9, 244–269. <https://doi.org/10.1093/jae/9.3.244>
- Garfield, R.M., Frieden, T., Vermund, S.H., 1987. Health-related outcomes of war in Nicaragua. *Am. J. Public Health* 77, 615–618. <https://doi.org/10.2105/AJPH.77.5.615>
- Goodhand, J., 2003. Enduring Disorder and Persistent Poverty: A Review of the Linkages Between War and Chronic Poverty. *World Dev.* 31, 629–646.
- Grundy, J., Biggs, B.-A., Annear, P., Mhrshahi, S., 2008. A CONCEPTUAL FRAMEWORK FOR PUBLIC HEALTH ANALYSIS OF WAR AND DEFENCE POLICY. *Int. J. Peace Stud.* 13, 88–99.
- Grundy, J.J., 2001. The impact of health system reform on remote health in Cambodia and the Philippines. *Rural Remote Health* 1, 84.
- Howell, E., Waidmann, T., Holla, N., Birdsall, N., Jiang, K., 2018. The Impact of Civil Conflict on Child Malnutrition and Mortality, Nigeria, 2002-2013. Center for Global Development 2055 L Street NW Washington, DC 20036, Washington,.
- IANSAs, Oxfam, and Saferworld, 2007. Africa's missing billions. International arms flows and the cost of conflict [WWW Document]. URL <https://www.oxfam.org/sites/www.oxfam.org/files/africas%20missing%20bils.pdf> (accessed 2.18.19).
- Ibáñez, A.M., Vélez, C.E., 2008. Civil Conflict and Forced Migration: The Micro Determinants and Welfare Losses of Displacement in Colombia. *World Dev.* 36, 659–676. <https://doi.org/10.1016/j.worlddev.2007.04.013>
- Igreja, V., Kleijn, W., Richters, A., 2006. When the war was over, little changed: women's posttraumatic suffering after the war in Mozambique. *J. Nerv. Ment. Dis.* 194, 502–509. <https://doi.org/10.1097/01.nmd.0000228505.36302.a3>
- Ityavyar, D.A., Ogba, L.O., 1989. Violence, conflict and health in Africa. *Soc. Sci. Med.*, Special Issue Political Violence and Health in the Third World 28, 649–657. [https://doi.org/10.1016/0277-9536\(89\)90212-8](https://doi.org/10.1016/0277-9536(89)90212-8)
- Jolem, M., 2016. The Impact of Conflict to Maternal and Child Health in Magwi County South Sudan – IHO [WWW Document]. URL <http://ihosavinglives.org/2016/12/05/the-impact-of-conflict-to-maternal-and-child-health-in-magwi-county-south-sudan/> (accessed 1.9.19).

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- Kinyoki, D.K., Moloney, G.M., Uthman, O.A., Kandala, N.-B., Odundo, E.O., Noor, A.M., Berkley, J.A., 2017. Conflict in Somalia: impact on child undernutrition. *BMJ Glob. Health* 2, e000262. <https://doi.org/10.1136/bmjgh-2016-000262>
- Londoño, A., Romero, P., Casas, G., 2012. The association between armed conflict, violence and mental health: a cross sectional study comparing two populations in Cundinamarca department, Colombia. *Confl. Health* 6, 12. <https://doi.org/10.1186/1752-1505-6-12>
- Minoiu, C., Shemyakina, O., 2012. Child Health and Conflict in Côte d'Ivoire. *Am. Econ. Rev.* 102, 294–299. <https://doi.org/10.1257/aer.102.3.294>
- Namasivayam, A., González, P.A., Delgado, R.C., Chi, P.C., 2017. The Effect of Armed Conflict on the Utilization of Maternal Health Services in Uganda: A Population-based Study. *PLOS Curr. Disasters* 1–12. <https://doi.org/10.1371/currents.dis.557b987d6519d8c7c96f2006ed3c271a>
- Østby, G., Urdal, H., Tollefsen, A.F., Che, C.P., Belbo, R., Gizelis, T.-I., Verwimp, P., Kotsadam, A., 2018. Armed Conflict and Maternal Health in Sub-Saharan Africa [WWW Document]. URL <https://www.prio.org/Projects/Project/?x=1643> (accessed 12.27.18).
- Prothero, R.M., 1994. Forced movements of population and health hazards in tropical Africa. *Int. J. Epidemiol.* 23, 657–664.
- Salama, P., Spiegel, P., Talley, L., Waldman, R., 2004. Lessons learned from complex emergencies over past decade. *Lancet Lond. Engl.* 364, 1801–1813. [https://doi.org/10.1016/S0140-6736\(04\)17405-9](https://doi.org/10.1016/S0140-6736(04)17405-9)
- Singh, S., Orbinski, J.J., Mills, E.J., 2007. Conflict and health: a paradigm shift in global health and human rights. *Confl. Health* 1, 1. <https://doi.org/10.1186/1752-1505-1-1>
- Somme, S.E.W., Nillesen, E., 2015. Long-term effects of violent conflict on second-generation health outcomes: evidence from Liberia. Presented at the 2015 CSAE conference, Oxford, pp. 1–19.
- Toole, M.J., Waldman, R.J., 1997. The public health aspects of complex emergencies and refugee situations. *Annu. Rev. Public Health* 18, 283–312. <https://doi.org/10.1146/annurev.publhealth.18.1.283>
- Tran, V., 2016. Angola: Health Care in a War-Torn Country [WWW Document]. URL <https://yaleglobalhealthreview.com/2016/03/01/angola-health-care-in-a-war-torn-country/> (accessed 1.1.19).
- UN, 2013. WOMEN SUFFER DISPROPORTIONATELY DURING AND AFTER WAR, SECURITY COUNCIL TOLD DURING DAY-LONG DEBATE ON WOMEN, PEACE AND SECURITY | Meetings Coverage and Press Releases [WWW Document]. URL <https://www.un.org/press/en/2003/sc7908.doc.htm> (accessed 1.9.19).
- UN health agency, 2017. Yemen's health system another victim of the conflict – UN health agency [WWW Document]. UN News. URL <https://news.un.org/en/story/2017/02/552032-yemens-health-system-another-victim-conflict-un-health-agency> (accessed 12.27.18).
- Wagner, Z., Heft-Neal, S., Bhutta, Z.A., Black, R.E., Burke, M., Bendavid, E., 2018. Armed conflict and child mortality in Africa: a geospatial analysis. *The Lancet* 392, 857–865. [https://doi.org/10.1016/S0140-6736\(18\)31437-5](https://doi.org/10.1016/S0140-6736(18)31437-5)
- Wessells, M.G., 2017. Children and armed conflict: Interventions for supporting war-affected children. *Peace Confl. J. Peace Psychol.* 23, 4. <https://doi.org/10.1037/pac0000227>

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- WHO, 2016. ALERT: Cholera and conflict in South Sudan [WWW Document]. URL https://reliefweb.int/sites/reliefweb.int/files/resources/south_sudan_donoralert_july2016.pdf (accessed 1.2.19).
- WHO, 2003. Potential impact of conflict on health in Iraq [WWW Document]. WHO. URL https://www.who.int/features/2003/iraq/briefings/iraq_briefing_note/en/ (accessed 12.27.18).
- WHO, 2000. Preventing Violent Conflict: The Search for Political Will, Strategies and Effective Tools. <https://doi.org/10.1037/e550142011-001>

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Table 1: Characteristics of included studies for systematic review

Country	Reference	Year	Type of article	Type of conflict	Health effects reported
Angola	Tran	2016	Report	Civil War	Nutritional status, health facility
Côte D'Ivoire	Minoiu and Sheymyakina	2011	Peer-reviewed	Civil conflict	Nutritional status
Eritrean-Ethiopia	Akresh et al.	2011	Discussion paper	International war	Nutritional status
Liberia	Sonne and Nillesen	2015	Research article	Civil war	Nutritional status
Nigeria	Dunn	2018	Peer-reviewed	Violent conflict	Nutritional status
Nigeria	Howell et al.	2018	Working paper	Civil conflict	Nutritional status
Sierra Leone	de Jong et al.	2000	Report	Civil war	Trauma
Somalia	Kinyoki et al.	2017	Peer-reviewed	Civil war	Nutritional status
South Sudan	Amnesty International	2016	Report	Armed conflict	Mental health
South Sudan	Doctors without Borders	2014	Briefing paper	Armed conflict	Health facility, nutritional status, health workers
South Sudan	WHO ^l	2016	Report	Violence conflict	Nutritional status, health facility, health workers
Uganda	Namasivayam el al.	2017	Research article	Civil war	Maternal healthcare utilization

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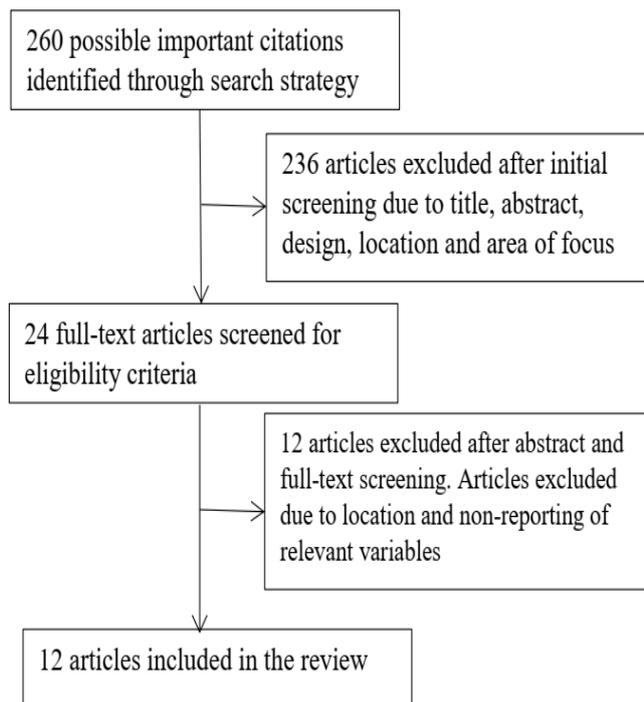


Figure 1: Flow diagram showing study selection process for systematic review of studies on conflict and health in Sub-Saharan Africa