



ELSEVIER

Contents lists available at ScienceDirect

## Journal of Migration and Health

journal homepage: [www.elsevier.com/locate/jmh](http://www.elsevier.com/locate/jmh)

## Understanding the health needs of internally displaced persons: A scoping review



David Cantor<sup>a,\*</sup>, Jina Swartz<sup>b</sup>, Bayard Roberts<sup>c</sup>, Aula Abbara<sup>d</sup>, Alastair Ager<sup>e,f</sup>,  
Zulfiqar A. Bhutta<sup>g</sup>, Karl Blanchet<sup>h</sup>, Derebe Madoro Bunte<sup>i</sup>, John Bosco Chika Chukwuorji<sup>j</sup>,  
Nihaya Daoud<sup>k</sup>, Winifred Ekezie<sup>l</sup>, Cecilia Jimenez-Damary<sup>m</sup>, Kiran Jobanputra<sup>n</sup>,  
Nino Makhashvili<sup>o</sup>, Diana Rayes<sup>p</sup>, Maria Helena Restrepo-Espinosa<sup>q</sup>,  
Alfonso J. Rodriguez-Morales<sup>r,s</sup>, Bukola Salami<sup>t</sup>, James Smith<sup>u</sup>

<sup>a</sup> Internal Displacement Research Programme, School of Advanced Study, University of London, UK

<sup>b</sup> Fellow, Academy of Medical Sciences, UK

<sup>c</sup> Health Services Research and Policy Department, London School of Hygiene and Tropical Medicine, UK

<sup>d</sup> Department of Infectious Disease, Imperial College London, London, UK; Syria Public Health Network

<sup>e</sup> Institute for Global Health & Development, Queen Margaret University, Edinburgh, UK

<sup>f</sup> Mailman School of Public Health, Columbia University, USA

<sup>g</sup> SickKids Centre for Global Child Health, Canada

<sup>h</sup> Geneva Centre of Humanitarian Studies, University of Geneva, Switzerland

<sup>i</sup> Department of Psychiatry, Dilla University, Ethiopia

<sup>j</sup> Department of Psychology, University of Nigeria, Nsukka, Nigeria

<sup>k</sup> Department of Public Health, Ben-Gurion University of the Negev, Israel

<sup>l</sup> Diabetes Research Center, University of Leicester, UK

<sup>m</sup> UN Special Rapporteur on the Human Rights of Internally Displaced Persons, Philippines

<sup>n</sup> Medecins Sans Frontières, UK

<sup>o</sup> Mental Health Centre, Ilia State University, Georgia

<sup>p</sup> Johns Hopkins Bloomberg School of Public Health, USA

<sup>q</sup> School of Medicine and Health Sciences, Universidad del Rosario, Colombia

<sup>r</sup> Grupo de Investigación Biomedicina, Fundacion Universitaria Autónoma de las Americas, Colombia

<sup>s</sup> Universidad Científica del Sur, Peru

<sup>t</sup> Faculty of Nursing, University of Alberta, Canada

<sup>u</sup> Elrha; Health in Humanitarian Crises Centre, London School of Hygiene and Tropical Medicine, UK

### ARTICLE INFO

#### Keywords:

Health  
Internal displacement  
Internally displaced persons  
IDPs  
Conflict

### ABSTRACT

We seek to strengthen understanding of the health needs of internally displaced persons (IDPs) in contexts of conflict or violence. Based upon a scoping review, our paper identified limited evidence on IDP health, but nevertheless indicates that IDPs tend to experience worse health outcomes than other conflict-affected populations across a range of health issues; and this is due to the particularly vulnerable situation of IDPs relative to these other populations, including reduced access to health services. Further research is required to better understand these needs and the interventions that can most effectively address these needs.

\* Corresponding author at: Internal Displacement Research Programme, School of Advanced Study, University of London, Senate House, Malet Street, WC1E 7HU, United Kingdom.

E-mail addresses: [david.cantor@sas.ac.uk](mailto:david.cantor@sas.ac.uk) (D. Cantor), [jina.swartz@merck.com](mailto:jina.swartz@merck.com) (J. Swartz), [bayard.roberts@lshrm.ac.uk](mailto:bayard.roberts@lshrm.ac.uk) (B. Roberts), [a.abbara15@ic.ac.uk](mailto:a.abbara15@ic.ac.uk) (A. Abbara), [aager@qmu.ac.uk](mailto:aager@qmu.ac.uk), [aa2468@columbia.edu](mailto:aa2468@columbia.edu) (A. Ager), [zulfiqar.bhutta@sickkids.ca](mailto:zulfiqar.bhutta@sickkids.ca) (Z.A. Bhutta), [karl.blanchet@unige.ch](mailto:karl.blanchet@unige.ch) (K. Blanchet), [derebem@gmail.com](mailto:derebem@gmail.com) (D. Madoro Bunte), [Johnbosco.chukwuorji@unn.edu.ng](mailto:Johnbosco.chukwuorji@unn.edu.ng) (J.C. Chukwuorji), [daoud@bgu.ac.il](mailto:daoud@bgu.ac.il), [Nihaya.daoud@gmail.com](mailto:Nihaya.daoud@gmail.com) (N. Daoud), [wce2@leicester.ac.uk](mailto:wce2@leicester.ac.uk) (W. Ekezie), [sr.hr.idps@gmail.com](mailto:sr.hr.idps@gmail.com), [idp@ohchr.org](mailto:idp@ohchr.org) (C. Jimenez-Damary), [kiran.jobanputra@london.msf.org](mailto:kiran.jobanputra@london.msf.org) (K. Jobanputra), [nino.makhashvili.1@iliauni.edu.ge](mailto:nino.makhashvili.1@iliauni.edu.ge) (N. Makhashvili), [drayes1@jhu.edu](mailto:drayes1@jhu.edu) (D. Rayes), [maria.restrepo@urosario.edu.co](mailto:maria.restrepo@urosario.edu.co) (M.H. Restrepo-Espinosa), [alfonso.rodriguez@uam.edu.co](mailto:alfonso.rodriguez@uam.edu.co), [arodriguezmo@cientifica.edu.pe](mailto:arodriguezmo@cientifica.edu.pe) (A.J. Rodriguez-Morales), [Bukola.salami@ualberta.ca](mailto:Bukola.salami@ualberta.ca) (B. Salami), [j.smith@elrha.org](mailto:j.smith@elrha.org) (J. Smith).

<https://doi.org/10.1016/j.jmh.2021.100071>

Received 23 July 2021; Received in revised form 26 October 2021; Accepted 26 October 2021

Available online 29 October 2021

2666-6235/© 2021 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

## 1. Introduction

Globally, there are approximately 48 million internally displaced persons (IDPs) who have fled conflict and violence (UNHCR 2021). IDPs are people who have been forced to leave their place of habitual residence but, unlike refugees, they have not crossed an internationally recognized State border (UNCHR 1998). Such internal displacement occurs across various contexts - including conflicts, environmental disasters and the negative impacts of climate change - and often results from, and leads to, multiple human rights violations. Nevertheless, compared with the health of other conflict-affected, disadvantaged or mobile populations, including refugees and migrants, IDP health is relatively poorly understood. Given the scale of internal displacement due to conflict or violence and the fact that IDPs are among the most disadvantaged people in affected countries, this is anomalous.

Drawing together the expertise of a newly-established global [Health and Internal Displacement Network](#) (HIDN) which resulted from an “Internal Displacement and Health” workshop convened in 2021 (AMS/IDRP 2021), the aim of this paper is to strengthen understanding of IDP health needs by analysing peer-reviewed research on the health impact of internal displacement in contexts of conflict or violence. To our knowledge, this is the first analysis of peer-reviewed research on health-related studies in IDP populations globally. It forms the first paper in the series in *Migration and Health* on ‘Health and Internal Displacement’. Related papers in the series will build upon the findings from this paper to help address the policy and programming responses required to better meet the health needs of IDPs.

## 2. Methods and materials

A non-systematic scoping review of the published, peer-reviewed literature was conducted. We chose a scoping review methodology as we sought to identify and map the available evidence and knowledge gaps on the broad topic of IDP health, rather than seek to answer a specific question through a systematic review methodology (Munn et al., 2018). The concepts of interest were internal displacement and health, and the populations of interest were IDPs. This followed the standard definition of IDPs as “persons or groups of persons 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 in order 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 (UNCHR 1998).

We included papers on IDP health where internal displacement was driven primarily by conflict or violence, but not where other drivers of displacement, such as environmental disasters or climate change, were foremost. Where research data or findings presented in the papers did not distinguish IDPs from refugees, migrants or other conflict-affected populations, the paper was not included. We excluded studies that were not peer-reviewed, and did not use reports, gray literature or anecdotal evidence. For reasons of space, adjacent health topics such as IDP nutrition have not been engaged in this review, although evidence suggests IDPs also have the worst nutrition outcomes compared to other conflict-affected populations (Martin-Canavate et al., 2020).

The data sources of interest were published primary research studies. Thus, the first three authors searched Embase, PubMed, the Cochrane Library and Web of Science between 4 and 15 January 2021. The search had no start date limitation, and was conducted up to December 2020. Only publications written in English were included in this part of the review, using a Boolean search strategy combining keyword and MeSH terms for “internally displaced persons”, “internal displacement”, “internally displaced”, “IDPs”, “health”, “mental health” and disease-specific terminology appropriate to the disease categories in this paper. Of several thousand studies identified through the database search, 113 were selected for detailed review and possible inclusion on the basis of direct relevance. We later updated our review in June 2021 by drawing

on the substantive input and review of participating HIDN co-authors.<sup>1</sup> Other papers in English and other languages, and in which the above terms were not necessarily stated explicitly in the title or abstract, were identified by key global experts among the HIDN co-authors.

We analysed the studies based on health outcomes, including data comparing health outcomes of IDPs with other populations, and key drivers of those outcomes. We also included recommendations given in the literature, but we do not intend to promote any particular intervention across contexts, given the scant data on interventions. Given the scoping approach of the paper, we have included our interpretations with the findings, rather than having a separate Discussion section. We also did not appraise the quality of the studies given the review methodology. We also note here the major limitation of using a scoping review, rather than a systematic review methodology, and this was due to the reasons given above. However, the paper does benefit from the extensive knowledge of the authors from HIDN. We also note the limitation that the database search was for English-language papers only. However, we did seek expert suggestions for other papers in other languages. In addition, the vast majority of studies on health and forced displacement in LMICs appear to be in the English language.

## 3. Review findings

### 3.1. Key biases in the literature

Peer-reviewed research on IDP health is scarce, especially when compared with cross-border migration in general, and refugees in particular (Blanchet et al., 2017; Owoaje et al., 2016; Hendrickx et al., 2020). This reflects, in part, a paucity of health data disaggregated concerning IDPs and a broader gap in research on displaced persons in low- and middle-income countries (LMICs), as opposed to displaced persons in high-income countries (HICs) (Morina et al., 2018). Within the IDP health literature, most research relates to encamped IDP populations rather than those settled in local communities, and to IDPs in African countries (these trends are connected, since IDPs are more easily-identifiable and thus easier to research when they are in camps than when hidden among the local population; and most IDP camps are in Africa). That represents a potential bias since, globally, the vast majority of IDPs do not live in camps, and more than half of the world’s IDPs are outside Africa (World Bank 2017). IDP health research also tends to focus heavily on mental health - particularly post-traumatic stress disorder (PTSD), depression and anxiety, when compared to other health outcomes.

### 3.2. Framing internal displacement and its health impact

Globally, the scale of internal displacement due to conflict and violence is considerably greater than refugee flows. During 2020, an estimated 9.8 million new incidents of conflict-driven internal displacement took place (IDMC 2021), as compared to the 1.4 million new refugees seeking protection outside their country that year (UNHCR 2021). This is only partially explained by the influence of COVID-19 during 2020 which resulted in significantly reduced refugee flows (UNHCR 2021). By the end of that year, the total global population of IDPs who had fled conflict and violence (48 million people) was almost twice that of refugees (26.4 million) (UNHCR 2021). This reflects a general trend across the past 15 years of rising annual levels of new conflict-driven internal displacement and a growing global population of IDPs (Cantor and Wooley, 2020), driven mainly by crises in Africa, the Middle East and Latin America (World Bank 2017). However, whilst refugees can be found in both HICs and LMICs, by 2020, 99.5% of conflict-affected IDPs were located in LMICs (IDMC 2021), with the largest populations in Syria (6.6 million), Democratic Republic of Congo (DRC) (5.3 million) and Colombia (4.9 million) (IDMC 2021).

<sup>1</sup> These HIDN co-authors are listed in alphabetical order after the first three major contributing authors.

Although internal displacement patterns are often context-dependent, the social profile of IDPs revolves around common features. Firstly, IDPs seem to be drawn principally from relatively poor and marginalised zones where conflict and violence are concentrated in that country. Secondly, IDPs tend to displace relatively short distances, at least in the first instance, often within the same region of the country (Cantor and Ochieng Apollo, 2020). Thirdly, although most IDPs have been displaced only once, repeated displacements are also not uncommon in some countries due to the ongoing risk of violence and poor living conditions during displacement (Cantor and Ochieng Apollo, 2020). Fourthly, the vast majority of IDPs live in host communities rather than camps, with less than one percent living in managed camps and another 11% live in self-settled camps, mainly in sub-Saharan Africa (World Bank 2017). Finally, compared to other populations (including internal migrants), IDPs experience significantly worse poverty and labor market outcomes. These effects can be long-lasting, with IDPs often over-represented among their country's poor and extreme poor (Cantor and Wooley, 2020).

A seminal conceptualisation of IDP health claims that IDPs also experience greater rates of illness and death than the baseline in their country (Leus et al., 2001). The authors explain this discrepancy by arguing that internal displacement exposes IDPs to new hazards that result from their new environment (such as new infectious agents), from the poor conditions *en route* or in the new settlement, and from the trauma of being forcibly displaced, compounded by the loss of their assets and social/support networks. Indeed, as we show, across a range of health issues and regions, studies over the past twenty years essentially bear out this claim that IDP health outcomes are worse than for baseline comparators in their country (Owoaje et al., 2016). However, whilst the underlying model has strong explanatory power, it remains partial. That is because it describes factors relevant to forced displacement in general rather than internal displacement in particular. In other words, those same hazards and vulnerabilities should apply equally to refugees and not only to IDPs. Nevertheless, as this paper shows, research suggests that IDPs tend to experience worse health outcomes than refugees.

The fact that IDPs do not benefit from formal international legal protection like refugees may help explain this trend (Rae, 2011; Hakamies et al., 2008), but its explanatory power is reduced by the fact that many national laws and African treaties on IDP protection now exist. We posit that practical factors may better explain the trend, including that: (i) conflict-affected IDPs are almost exclusively located in LMICs, with all of the resource constraints that entails, whilst refugees end up in both LMICs and HICs; (ii) IDPs tend to be from conflict-affected zones, and are thus poorer and more vulnerable to begin with, compared with refugees who tend to reflect a broader distribution of social profiles in the country (Cantor and Ochieng Apollo, 2020); (iii) IDPs remain in their country and thus remain exposed to direct and indirect risks and impacts of the conflict, including on health services and the economy, whilst refugees have greater access to protection and assistance outside the country; and (iv) the international community is less interested in IDP than refugee situations, resulting in less assistance and attention paid to IDPs.

The situation of IDPs is thus defined by double disadvantage: they experience the losses and new hazards of forced displacement (i.e. disadvantage in relation to other local inhabitants); but they do not have access to advantages that can result from leaving the country (i.e. disadvantage in relation to refugees). Moreover, a range of studies illustrate the underlying 'social' (rather than purely environmental) nature of many immediate determinants of IDP health, including poverty and loss of land, overcrowding and changes in cultural norms (Roberts et al., 2009); one study suggests that most IDP health problems are 'connected directly with income' (Amodu et al., 2020). The way that internal displacement shapes the social situation of IDPs can produce long-lasting, diffuse and even transgenerational health impacts; a study on Palestinian IDPs suggests that they, their families and descendants, had poorer health than non-IDPs, even 60 years after initial displacement

(Daoud et al., 2012). Moreover, as we will show, gender and age shape the health impact of internal displacement within IDP populations (Leus et al., 2001; Villamizar-Pena et al., 2021; Rodriguez-Morales et al., 2019; Castañeda-Hernández et al., 2018).

The arrival of IDPs can put strain on local economies and services, including healthcare (Singh et al., 2007; Quintero and Culler, 2009). Host community resentment can arise as a result, but may also emerge if IDPs receive special assistance due to their status as such (Quintero and Culler, 2009). Nonetheless, the economic roots of many IDP health problems point to a need for economic empowerment of IDPs (Amodu et al., 2020), including through cash transfer programmes to meet basic needs (Falb et al., 2020). In general, given the limited resources available, any IDP health interventions in LMICs must also be low-cost and community-based (Falb et al., 2020). For example, training IDPs as health workers in camps has sometimes proven effective (Ehiri et al., 2014). Using existing structures can amplify intervention success and reduce costs (Ekezie et al., 2020). Regardless of the intervention type and duration, essential healthcare service interventions appear beneficial for IDP health, with programmes integrating multiple public healthcare components offering the greatest benefit, uptake and coverage (Ekezie et al., 2020). Mobile service provision may also be beneficial in active-conflict areas (Mullany et al., 2008), although the evidence remains weak (McGowan et al., 2020). In IDP camps, surveillance systems have helped to heighten the capacity to quickly detect disease outbreaks (Pinto et al., 2005). The limited research on IDP children suggests that education-based interventions may be less effective than humanitarian assistance (Salami et al., 2020).

We turn now to review the main IDP health research findings in relation to health issues: mortality (section 3.3); communicable diseases (section 3.4); non-communicable diseases (section 3.5); mental health (section 3.6); sexual and reproductive health (section 3.7), before drawing conclusions (section 4).

### 3.3. Mortality

Mortality rates vary by context, emergency complexity, the characteristics of affected groups and migration flow (Reed et al., 2018). Generally, mortality comparisons with non-crisis settings are difficult because of the non-comparability of data (Bellos et al., 2010). An early study asserts that crude mortality rates (CMRs) for IDPs 'are significantly higher than the baseline rates; in the most extreme case, Somalia, CMRs for internally displaced were 50 times the baseline' (Leus et al., 2001). Subsequent studies also report CMRs greatly exceeding international emergency thresholds for adults and children in other IDP camps in Sudan, DRC and Chad (Grandesso et al., 2005; Depoortere et al., 2004; Ahoua et al., 2006), and non-encamped IDPs in Myanmar (Mullany et al., 2007). A study in Chad reported that CMRs in the IDP camps significantly exceeded those among non-displaced residents in the same region (Guerrier et al., 2009). Arguably the most powerful evidence comes from a meta-analysis of combined mortality studies which showed how the excess mortality rate among IDPs was significantly higher than for refugees, likely because they were separated from the trigger of the crisis, and had better access to assistance (Heudtlass et al., 2016).

Research suggests the leading causes of mortality among IDPs are preventable infectious diseases such as diarrhoea, malaria and respiratory diseases, commonly driven by overcrowding, unsanitary and substandard living conditions, little access to livelihoods and subsistence coping mechanisms or humanitarian assistance, and malnutrition (Grandesso et al., 2005; Depoortere et al., 2004; Ahoua et al., 2006; Mullany et al., 2007; Guerrier et al., 2009). In certain IDP camps in Sudan, violence was also a leading cause of death, particularly among young men (Grandesso et al., 2005; Depoortere et al., 2004).

Policies and programmes for IDPs need to be evidence-informed and should focus on minimum indicators associated with mortality (Spiegel et al., 2002). In camp settings, identifying and registering



IDPs should allow for the more systematic provision of healthcare and measurement of mortality. For example, a study in Chad found decreased CMR in IDP camps that implemented community-based mortality surveillance (Bowden et al., 2012). However, this still requires improved population estimates and standardised reporting procedures. Hence, better epidemiological studies with more precise case definitions are needed to provide the evidence base for priority setting and program impact assessments.

### 3.4. Communicable diseases

IDPs are at increased risk of communicable diseases compared to local populations (Owoaje et al., 2016). In Colombia, the incidences of tuberculosis and enteroparasitic diseases were 8 and 5.4 higher among IDPs than local populations (Castañeda-Hernández et al., 2018; AJ Rodriguez-Morales et al., 2018). This higher risk of communicable diseases is due to host, environmental and health system factors. Host susceptibility is influenced by inadequate nutrition (particularly among children) as well as greater risks associated with incomplete vaccination, leaving IDPs particularly susceptible to outbreaks of vaccine preventable diseases (VPDs). Humanitarian emergencies often create or exacerbate transmission factors, such as mass population displacement, overcrowding, malnutrition and poor sanitary and the scarcity of basic preventative measures such as access to soap and clean water among IDP populations, leaving IDPs exposed to epidemics (Lam et al., 2015).

IDP health interventions such as water treatment can be crucial in controlling communicable diseases, reducing diarrhea incidence by about 90% and prevalence by over 80% (Ekezie et al., 2020). However, disease stages can add to intervention complexity and affect treatment uptake and adherence. Thus, the treatment of chronic diseases such as human immunodeficiency virus (HIV) and tuberculosis can be interrupted by the act of forced displacement or as a result of the unpredictable and poor living conditions of IDP populations, including the risk of repeated displacement (Ekezie et al., 2020). In Sudan, significantly higher rates of tuberculosis retreatment among IDPs reflected not only the poor conditions in IDP camps, but also attempts by the government to relocate the camps in previous years, interrupting tuberculosis treatment programmes (Böhler et al., 2005).

Emerging research on COVID-19 among IDP populations suggests its impact will follow the pattern of other highly infectious communicable respiratory diseases (Khouzam and Verma, 2020). For example, whilst encamped IDPs in DRC have high awareness of COVID-19, they possess insufficient specific knowledge and face significant barriers to preventative measures, including crowded shelters, the need to leave camp for daily work, and a lack of soap for hand hygiene (Orendain and Djalante, 2021). That study suggests health actors should provide soap and face masks and promote individual family tented dwellings to allow physical distancing, while observing that a safe return to their homes would allow IDPs to practice COVID-19 prevention without external assistance (Claude et al., 2020). Likewise, although IDPs in Syrian tented settlements displayed adequate knowledge of COVID-19, they lacked the means to prevent transmission due to insufficient water and cleaning supplies, or through 'shielding' due to constraints such as overcrowding (Douedari et al., 2020).

#### 3.4.1. Vector-borne diseases

Disruption of prevention and control programmes by conflict and displacement contributes to a high prevalence of (and mortality from) vector-borne diseases (VBDs), such as malaria and leishmaniasis, among IDP populations (Owoaje et al., 2016; Villamizar-Pena et al., 2021; Muhjazi et al., 2019; AJ Rodriguez-Morales et al., 2018). The congested, overcrowded conditions in which IDPs often live represent an additional risk factor. For instance, the yellow fever mosquito vector thrives in densely populated areas such as IDP camps and urban settings (Huhn et al., 2006). In DRC, malaria prevalence among children

under five years of age living in an IDP camp was over double that of local village children (Charchuk et al., 2016). Likewise, a scoping review pinpoints malaria in pregnancy as common among African IDP women due to open shelter housing in IDP camps (Amodu et al., 2020).

Conversely, living in a well-run IDP camp or otherwise receiving dedicated healthcare as an IDP can lower the risk of VBDs. On the Myanmar-China border, malaria in IDP camps was significantly lower than in surrounding villages due to prompt establishment of clinics and investment in proactive malaria control activities to reduce the risk of malaria transmission (Zhou et al., 2016). Similarly, among non-encamped IDPs in the Colombian city of Neiva, the prevalence of arboviral diseases such as dengue, chikungunya and Zika was considerably lower among IDPs than the general population (Rodriguez-Morales et al., 2019), perhaps reflecting the prioritised access that these IDPs had to local healthcare.

On interventions, a recent review found that the most cost-effective malaria control strategy among IDP populations is symptom-based screening, though mass drug administration, mass screening and treatment are the most comprehensive strategies. It also stressed the importance of engaging with the local community and using community health workers to ensure the effectiveness of interventions (Ekezie et al., 2020). Notably, such control strategies cannot be limited only to IDP camps if they are to be effective. The study on the Myanmar-China border makes clear that the expansion of successful malaria intervention strategies from IDP camps to the surrounding villages was critical for controlling malaria in the broader area and over the longer term (Zhou et al., 2016).

Insecticide treated nets (ITN) distribution programmes can also play an important role in malaria prevention in IDP settings (Spencer et al., 2004). However, ITN usage has also posed a challenge in some IDP camps. In the DRC, space constraints due to overcrowding and the practice of sleeping on mats made the use of ITNs difficult by IDPs. Furthermore, the shortage of water made washing the nets a problem, whilst food insecurity compelled some IDP women to sell theirs to local communities (Brooks et al., 2017). Another study in an IDP camp in the DRC suggests that control measures focused on ITN distribution appeared underutilized and insufficient to limit childhood malaria in the IDP camp. In such circumstances, additional targeted control measures, such as 'indoor residual spraying and active case finding and treatment of minimally symptomatic individuals', should be considered (Charchuk et al., 2016).

#### 3.4.2. Vaccine-preventable diseases

VPDs, particularly measles and respiratory infections such as tuberculosis, influenza and pneumonia, contribute disproportionately to morbidity and mortality in complex emergencies (Bellos et al., 2010; Kouadio et al., 2010). Children who are unvaccinated due to forced displacement are at increased risk of VPDs, such as measles and tuberculosis, with short and long term health-related consequences (Kouadio et al., 2010; Kimbrough et al., 2012). Hence, vaccination is among the most fundamental health interventions for protecting vulnerable populations such as IDPs, especially during emergencies (Lam et al., 2015). However, the sudden mass movement of people due to internal displacement, and the resulting strain on healthcare systems due to conflict and displacement, disrupts routine immunization services and threatens efforts to eradicate VPDs (Lam et al., 2015; Grundy and Biggs, 2019). For instance, Syria had a strong immunization program prior to the conflict and reported its last polio case in 1999, but in 2013, two years into the conflict, a polio outbreak was declared that affected both IDPs and local communities (Teleb and Hajjeh, 2017).

Although research specifically on VPDs among IDPs is relatively scarce, a review of research from six African countries found IDPs appear to experience increased susceptibility to VPDs (Owoaje et al., 2016). IDPs are also no less susceptible than other populations to fears about vaccination. A study on perceptions of cholera vaccination among IDPs in South Sudan showed factors contributing to vaccination refusal include presumed side effects, political influence and fear 'that vaccines

might be used as a weapon against them' (Peprah et al., 2016). Efforts to vaccinate IDP populations against COVID-19 face similar challenges.

There is often no specific vaccine service provision for IDPs, such that they compete for the same supply as local residents. This can contribute to vaccine shortages locally, as experienced by IDPs in Ukraine (Nidzvetska et al., 2017). However, even in insecure conflict contexts where IDPs are periodically inaccessible, research shows that vaccination interventions among IDPs and local populations can work. Key factors include intensive social mobilization, collaboration with key community and agency partners, including grassroots organisations and mass media, well-trained health staff, additional human resources, appropriate vaccine delivery systems and accurate estimates of target populations, as well as the utility of negotiations with opposition armed forces to permit vaccination in remote areas (Lam et al., 2015; Huhn et al., 2006; Abubakar et al., 2015). Integrating vaccination services into other core interventions such as nutrition could also increase uptake among IDPs, as shown in South Sudan (Oladeji et al., 2019). However, vaccine education for IDPs needs to be prioritised as evidence has shown that poor awareness, low disease risk perceptions and distrust impact vaccine uptake among IDPs, equally as common in other populations (Peprah et al., 2016). All these points are particularly pertinent for vaccines for COVID-19 given concerns about IDPs access them.

### 3.5. Non-communicable diseases

Very few peer-reviewed studies on NCDs (other than mental health) among IDPs have been published. A study in Ukraine found that 59.8% of IDPs reported at least one NCD, and IDPs were more likely to report interruptions in care and medication than non-displaced, conflict-affected adults (Greene-Cramer et al., 2020). Research in Ukraine, Uganda and Georgia has identified relatively high rates of alcohol use disorder among IDPs, which represents a risk factor for cardiovascular disease, diabetes and liver disease (Ramachandran et al., 2019; Roberts et al., 2011; Roberts et al., 2014). Studies of IDPs in Iraq have identified a high proportion of NCDs, including hypertension, diabetes, "digestive diseases", and "bone diseases." (Dudova et al., 2015; Cetorelli et al., 2017; Lafta et al., 2016). Research from northern Syria found 28.4% of adults had an NCD diagnosis (Vernier et al., 2019). Other studies have explored NCDs among populations known to comprise IDPs but have not explicitly disaggregated displaced from non-displaced populations (van Berlaer et al., 2017; Ansbro et al., 2019).

When humanitarian programmes provide NCD care, typically only what are known as the 'big four' (cardiovascular diseases, diabetes, chronic respiratory diseases and cancer) have received attention. Of displaced and crisis-affected populations more broadly (inclusive of refugees), some limited information has been collated on the burden of diabetes and hypertension (Kehlenbrink et al., 2019; Keasley et al., 2020). Data for other NCDs such as cancer and neurological conditions is severely lacking in IDP populations.

### 3.6. Mental health

There is a considerable body of research on mental health in IDP populations. Numerous studies report high levels of PTSD, depression and anxiety in adult or mixed-age IDP populations (Makhashvili et al., 2014; Thapa and Hauff, 2005; Husain et al., 2011; Richards et al., 2011; Roberts et al., 2019; Elhabiby et al., 2015). The evidence suggests the prevalence of these mental health disorders appears higher among IDPs than non-IDPs in numerous country locations (Husain et al., 2011; Siriwardhana et al., 2014; Nakimuli-Mpungu et al., 2013; Schmidt et al., 2008; Lagos-Gallego et al., 2017). Systematic reviews and individual studies also indicate IDPs may also have worse mental health outcomes than refugees overall but this varies between contexts (Schmidt et al., 2008; Tekeli-Yesil et al., 2018; Porter and Haslam, 2005). However, it should be noted some heterogeneity in prevalence rates may be caused

by methodological differences between studies and differences between conflict-affected IDP and refugee populations (Morina et al., 2018).

In addition, mental health disorders due to internal displacement can persist for decades, even after the conflict has resolved (Makhashvili et al., 2014; Husain et al., 2011; Comtesse et al., 2019). Studies also highlight the long-term and inter-generational effects of internal displacement on mental health (Daoud et al., 2012; Makhashvili et al., 2014; Husain et al., 2011; Comtesse et al., 2019; Flink et al., 2013). There is also evidence that poor mental health among IDPs significantly worsened due to COVID-19 (Moya et al., 2020).

Common predictors of mental disorders among IDP populations are female gender (Makhashvili et al., 2014; Thapa and Hauff, 2005; Richards et al., 2011; Roberts et al., 2008; Sheikh et al., 2015; Turnip and Hauff, 2007; Madoro et al., 2020) (although male gender is strongly associated with harmful alcohol use (Ramachandran et al., 2019; Roberts et al., 2011; Roberts et al., 2014; Lagos-Gallego et al., 2017; Kizza et al., 2012) and experiencing multiple traumatic events (Amodu et al., 2020; Makhashvili et al., 2014; Richards et al., 2011; Porter and Haslam, 2005; Roberts et al., 2008; Madoro et al., 2020; Gichunge et al., 2020; Almedom et al., 2005; Araya et al., 2007), unemployment and impoverishment (Makhashvili et al., 2014; Roberts et al., 2008; Sheikh et al., 2015; Siriwardhana et al., 2013), and prolonged and multiple internal displacement (Makhashvili et al., 2014; Siriwardhana et al., 2014; Madoro et al., 2020; Gichunge et al., 2020; Siriwardhana et al., 2013).

A significant treatment gap exists for IDPs in accessing mental health and psychosocial support (MHPSS) services (Hendrickx et al., 2020; Roberts et al., 2019; Chikovani et al., 2015). Regarding mental health interventions, education on anxiety and coping skills appears most effective in relieving symptoms, and group therapy approaches appear to be most acceptable and cost-effective (Ekezie et al., 2020). However, given the breakdown of community, family and other social support structures and challenges to sustainable economic and livelihood activities, mental healthcare interventions among IDPs should also focus on supporting efforts to restore these essential resources and respond to the particular contexts factors related to internal displacement (Roberts et al., 2009; Siriwardhana et al., 2014; Kaiser et al., 2020; Singh et al., 2018; Seguin et al., 2017). Age and gender should also be built into the design of MHPSS interventions for IDPs given their influence on mental health symptoms and coping responses (see above) (Singh et al., 2018; Seguin et al., 2017). Finally, if depression and anxiety symptoms are highly prevalent when IDPs arrive at a new location, then MHPSS may be most effective over the longer-term if offered at this point (Thapa and Hauff, 2005).

### 3.7. Sexual, reproductive and maternal health

There is evidence that IDPs not living in camps experience a disproportionate burden of sexual and reproductive health problems compared to non-IDPs. In Colombia, this is reflected in higher rates of unintended pregnancies, adolescent pregnancies and sexually-transmitted infections (Quintero and Culler, 2009). In Ukraine, studies found that, among IDP women, psychological distress related to conflict and displacement is often reported and is a primary reason for discontinuing breast-feeding before their infant was six months old (Nidzvetska et al., 2017; Summers and Bilukha, 2018). In Georgia, internal displacement was not associated with sexually transmitted infections but with pelvic inflammatory disease; however, that relationship was weakened when socioeconomic variables were taken into account, suggesting that the risk of infection relates to the broader profile of IDPs rather than just the fact of displacement itself (Doliashvili and Buckley, 2008). In contrast, there is evidence that IDP women living in organised settings such as IDP camps may have better reproductive health than neighbouring local populations (Owoaje et al., 2016).

Risk factors for, and incidence of, sexually transmitted infections (STI) and HIV in displacement settings are contextual (Khaw et al.,

2000). These conditions may not always be effectively factored into humanitarian programming, particularly in areas where there may be associated stigma. For IDPs displaced due to conflict, STIs and HIV may be associated with sexual and gender-based violence (SGBV) (Kim et al., 2009), increasingly used as a systematic weapon during conflict. Poor living conditions may also facilitate transmission in some IDP populations. In Georgia, one study suggested a geographic concentration of HIV and hepatitis infection in areas with greater clusters of IDPs residing in collective centres with poor living conditions (Elbaz, 2020).

HIV requires a high degree of treatment fidelity for its management and to avoid development of antiretroviral resistance. Among relatively settled groups of IDPs in Africa, adherence to HIV treatment appears generally high (Ekezie et al., 2020). In Uganda, one study found no significant difference in adherence rates between IDPs and non-IDPs, and the factors driving non-adherence (i.e. being on first-line therapy and a 'condemning' attitude among clinic staff) appeared to be not specifically related to displacement (Garang et al., 2009). However, in Kenya another study found that recently displaced HIV-positive adults died at higher rates than HIV-positive local resident adults, potentially due to increased exposure to fatal opportunistic infections, as displacement disrupted daily cotrimoxazole prophylaxis treatment for those not yet, or recently started, on therapy (Feikin et al., 2010). As such, IDPs must not be excluded from HIV national strategic plans (Mendelsohn et al., 2014). Indeed, HIV care is possible, even in displacement settings, if planned effectively. Critical factors for ensuring continuity of HIV care in crisis contexts identified by a study on IDPs in Kenya include: 'planning to develop programs that can function during a crisis, an emphasis on a rapid programmatic response, the ability of clinics to function autonomously, patient knowledge of their disease, the use of community and patient networks, addressing staff needs and developing effective patient tracking systems' (Goodrich et al., 2013). In stable settings at increased risk of disruption, the negative potential of interruptions in treatment may likewise be decreased if 'the period of disruption is short, there are strong contingency plans in place for ensuring continuing access to treatment, and people on ART have been educated on how to best manage their treatment in these challenging circumstances' (Mendelsohn et al., 2014).

A review of healthcare services provided to IDPs found that improved availability of health workers and essential supplies, especially the provision of family planning commodities for pregnancy risk reduction, resulted in maternal and child health improvements, whilst the availability of maternal and child healthcare services at clinics created positive awareness among mothers and increased usage of health facilities (Ekezie et al., 2020).

#### 4. Conclusion

This paper reviewed the published evidence on the health needs of IDPs to help inform future research and programming. While fully recognizing the great diversity of IDP populations, contexts and health needs, this review does provide some generalisable findings, highlighting worse mortality and other health outcomes among IDPs when compared to host communities and refugee populations. It also underscores how strongly social determinants influence these health needs, including limited legal and humanitarian protection (compared to that for refugees). In addition, the evidence suggests more limited access to essential health services for IDPs compared to host populations for certain health issues. Strengthening equity in access to health services and health outcomes between IDPs and host populations is key. This necessitates adjusting responses to be more adaptive and appropriate to the contexts of internal displacement and health needs of IDPs. It also requires balancing acute humanitarian responses with longer-term approaches that seek sustainable investment in the various pillars comprising the health system. This paper also notes the importance of recognizing and supporting coping and resilience mechanisms used by IDPs and their communities.

A number of key research recommendations arise from this review paper. First, more research is required to better understand differential health outcomes between IDP and host populations (and also within IDP populations) and their causal pathways. This includes epidemiological data on health outcomes for IDPs and host populations, and also qualitative research to help explain differences in health outcomes. Second, research is needed on how to adapt policy and programming responses to the context of internal displacement to improve IDP health outcomes and promote health equity. This requires research to better understand IDP health needs, expectations and practices to support more responsive health services and systems. Health system research is also needed to better understand the health system context in which IDP health services are delivered and how they can be strengthened. Third, more research is required to better understand and support community responses, social support, coping mechanisms and resilience amongst IDPs. To help develop these recommendations, the next paper in this series on IDP health will discuss policy and programming activities for IDPs, including how to support community responses.

The findings and recommendations in this review paper also highlight the need for collaboration across research disciplines, methodological approaches, and the health and protection sectors, in order to tackle the complex challenges for improving IDP health. Above all, it highlights the need for greater involvement of affected IDP populations in the design and conduct of programmes and research concerning their health and wellbeing in order to make them more effective and responsive to IDP health needs.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Funding sources

The work of the first and third authors was supported by the Global Challenges Research Fund, United Kingdom Research and Innovation (grant numbers AH/T005351/1, EP/T003227/1 and ES/P010873/1).

#### Acknowledgements

The **Health and Internal Displacement Network** (HIDN) results from an "Internal Displacement and Health" workshop convened in 2021 by the Academy of Medical Sciences, UK, and the **Internal Displacement Research Programme**. HIDN is supported by the Global Challenges Research Fund, United Kingdom Research and Innovation (grant numbers AH/T005351/1, EP/T003227/1 and ES/P010873/1). We thank the participants in the workshop, network and activities for their input. Findings from an initial draft of this paper were shared in early 2021 with the United Nations Secretary-General's High Level Panel on Internal Displacement.

#### References

- Abubakar, A., Azman, A.S., Rumunu, J., Ciglenecki, I., Helderman, T., West, H., et al., 2015. The First Use of the Global Oral Cholera Vaccine Emergency Stockpile: lessons from South Sudan. *PLoS Med.* 12 (11), e1001901.
- Ahoua, L., Tamrat, A., Duroch, F., Grais, R.F., Brown, V., 2006. High mortality in an internally displaced population in Ituri, Democratic Republic of Congo, 2005: results of a rapid assessment under difficult conditions. *Glob. Public Health* 1 (3), 195–204.
- Almedom, A., Tesfamichael, B., Mohammed, Z., Mascie-Taylor, N., Muller, J., Alemu, Z., 2005. Prolonged displacement may compromise resilience in Eritrean mothers. *Afr. Health Sci.* 5 (4), 310–314.
- Amodu, O.C., Richter, M.S., Salami, B.O., 2020. A scoping review of the health of conflict-induced internally displaced women in Africa. *Int. J. Environ. Res. Public Health* 17 (4).
- AMS/IDRP, 2021. Health and Internal Displacement: Virtual Workshop 4 and 11 February 2021. Academy of Medical Sciences/Internal Displacement Research Programme, London.



- Ansbro, E.M., Biringanine, M., Caleo, G., Prieto-Merino, D., Sadique, Z., Perel, P., et al., 2019. Management of diabetes and associated costs in a complex humanitarian setting in the Democratic Republic of Congo: a retrospective cohort study. *BMJ Open* 9 (11), e030176.
- Araya, M., Chotai, J., Komprou, I.H., de Jong, J.T., 2007. Effect of trauma on quality of life as mediated by mental distress and moderated by coping and social support among postconflict displaced Ethiopians. *Qual. Life Res.* 16 (6), 915–927.
- Bellos, A., Mulholland, K., O'Brien, K.L., Qazi, S.A., Gayler, M., Checchi, F., 2010. The burden of acute respiratory infections in crisis-affected populations: a systematic review. *Confl. Health* 4 (1), 3.
- Blanchet, K., Ramesh, A., Frison, S., Warren, E., Hossain, M., Smith, J., et al., 2017. Evidence on public health interventions in humanitarian crises. *Lancet* 390 (10109), 2287–2296.
- Böhler, M., Mustafaa, S.A., Mørkve, O., 2005. Tuberculosis treatment outcome and health services: a comparison of displaced and settled population groups in Khartoum. *Sudan. Int. J. Tubercul. Lung Dis.* 9 (1), 32–36.
- Bowden, S., Braker, K., Checchi, F., Wong, S., 2012. Implementation and utilisation of community-based mortality surveillance: a case study from Chad. *Confl Health* 6 (1), 11.
- Brooks, H.M., Jean Paul, M.K., Claude, K.M., Mocanu, V., Hawkes, M.T., 2017. Use and disuse of malaria bed nets in an internally displaced persons camp in the Democratic Republic of the Congo: a mixed-methods study. *PLoS ONE* 12 (9), e0185290.
- Cantor, D.J., Ochieng Apollo, J., 2020. Internal displacement, internal migration and refugee flows: connecting the dots. *Refugee Surv. Quart.* 39 (4), 647–664.
- Cantor, D.J., Wooley, A., 2020. Internal displacement and responses at the global level: a review of the scholarship. *Internal Displacement. Res. Programme Work. Paper Ser.* 1, 1–2.
- Castañeda-Hernández, D.M., Ramírez-Echeverri, M., Sánchez-Ramírez, N., Bedoya-Arias, H.A., Sánchez-Castaño, D.M., Collazos-Zapata, N., et al., 2018. Comparative incidence of Tuberculosis among internally displaced people of Colombia, 2009–2016. *Int. J. Infect. Dis.* 73, 345.
- Cetorelli, V., Burnham, G., Shabila, N., 2017. Prevalence of non-communicable diseases and access to health care and medications among Yazidis and other minority groups displaced by ISIS into the Kurdistan Region of Iraq. *Confl. Health* 11 (1), 4.
- Charchuk, R., Paul, M.K., Claude, K.M., Houston, S., Hawkes, M.T., 2016. Burden of malaria is higher among children in an internal displacement camp compared to a neighbouring village in the Democratic Republic of the Congo. *Malar. J.* 15 (1), 431.
- Chikovani, I., Makhshvili, N., Gotsadze, G., Patel, V., McKee, M., Uchaneishvili, M., et al., 2015. Health service utilization for mental, behavioural and emotional problems among conflict-affected population in Georgia: a cross-sectional study. *PLoS ONE* 10 (4), e0122673.
- Claude, K.M., Serge, M.S., Alexis, K.K., Hawkes, M.T., 2020. Prevention of COVID-19 in Internally Displaced Persons Camps in War-Torn North Kivu, Democratic Republic of the Congo: a Mixed-Methods Study. *Glob. Health Sci. Pract.* 8 (4), 638–653.
- Comtesse, H., Powell, S., Soldo, A., Hagl, M., Rosner, R., 2019. Long-term psychological distress of Bosnian war survivors: an 11-year follow-up of former displaced persons, returnees, and stayers. *BMC Psychiatry* 19 (1), 1.
- Daoud, N., Shankardass, K., O'Campo, P., Anderson, K., Agbaria, A.K., 2012. Internal displacement and health among the Palestinian minority in Israel. *Soc. Sci. Med.* 74 (8), 1163–1171.
- Depoortere, E., Checchi, F., Broillet, F., Gerstl, S., Minetti, A., Gayraud, O., et al., 2004. Violence and mortality in West Darfur, Sudan (2003–04): epidemiological evidence from four surveys. *Lancet* 364 (9442), 1315–1320.
- Doliashvili, K., Buckley, C., 2008. Women's sexual and reproductive health in post-socialist Georgia: does internal displacement matter? *Int. Fam. Plan Perspect.* 34 (1), 21–29.
- Douedari, Y., Alhaffar, M., Al-Twaish, M., Mkhallalati, H., Alwany, R., Ibrahim, N.B.M., et al., 2020. Ten years of war! You expect people to fear a "germ"? a qualitative study of initial perceptions and responses to the COVID-19 pandemic among displaced communities in opposition-controlled northwest Syria. *J. Migr. Health* 1–2, 100021.
- Dudova, Z., Khali, I., Ulman, P., Krcmery, V., Pyšný, L., Majer-Müller, L., et al., 2015. Commonest diseases amongst iraqi internally displaced after Islamic state expansion. *Clin. Soc. Work Health Intervent.* 5 (2), 58–64.
- Ehiri, J.E., Gunn, J.K., Center, K.E., Li, Y., Rouhani, M., Ezeanolue, E.E., 2014. Training and deployment of lay refugee/internally displaced persons to provide basic health services in camps: a systematic review. *Glob Health Act.* 7, 23902.
- Ekezie, W., Adajii, E.E., Murray, R.L., 2020. Essential healthcare services provided to conflict-affected internally displaced populations in low and middle-income countries: a systematic review. *Health Promot. Perspect.* 10 (1), 24–37.
- Elbaz, J., 2020. Assessing the Risk of HIV and Hepatitis C among Internally Displaced Persons in Georgia. *Ann Glob Health* 86 (1), 66.
- Elhabiby, M.M., Radwan, D.N., Okasha, T.A., El-Desouky, E.D., 2015. Psychiatric disorders among a sample of internally displaced persons in South Darfur. *Int. J. Soc. Psychiatry* 61 (4), 358–362.
- Falb, K.L., Blackwell, A.H., Stennes, J., Annan, J., 2020. Cash assistance programming and changes over time in ability to meet basic needs, food insecurity and depressive symptoms in Raqqa Governorate, Syria: evidence from a mixed methods, pre-posttest. *PLoS ONE* 15 (5), e0232588.
- Feikin, D.R., Adazu, K., Obor, D., Ogwang, S., Vulule, J., Hamel, M.J., et al., 2010. Mortality and health among internally displaced persons in western Kenya following post-election violence, 2008: novel use of demographic surveillance. *Bull. World Health Organ.* 88 (8), 601–608.
- Flink, J.J.E., Restrepo, M.H., Blanco, D.P., Ortegón, M.M., Enriquez, C.L., Beirens, T.M.J., et al., 2013. Mental health of internally displaced preschool children: a cross-sectional study conducted in Bogotá, Colombia. *Soc. Psychiatry Psychiatr Epidemiol.* 48 (6), 917–926.
- Garang, P.G., Odoi, R.A., Kalyango, J.N., 2009. Adherence to antiretroviral therapy in conflict areas: a study among patients receiving treatment from Lacor Hospital, Uganda. *AIDS Patient Care STDS.* 23 (9), 743–747.
- Gichunge, C., Mutiso, D., Brynjarsdottir, J., 2020. Predictors of social support, physical health and mental health among food insecure internally displaced persons in Turkana, Kenya. *Confl. Health* 14, 58.
- Goodrich, S., Ndege, S., Kimaiyo, S., Some, H., Wachira, J., Braitstein, P., et al., 2013. Delivery of HIV care during the 2007 post-election crisis in Kenya: a case study analyzing the response of the Academic Model Providing Access to Healthcare (AMPATH) program. *Confl. Health* 7 (1), 25.
- Grandesso, F., Sanderson, F., Kruijt, J., Koene, T., Brown, V., 2005. Mortality and malnutrition among populations living in South Darfur, Sudan: results of 3 surveys, September 2004. *JAMA* 293 (12), 1490–1494.
- Greene-Cramer, B., Summers, A., Lopes-Cardozo, B., Husain, F., Couture, A., Bilukha, O., 2020. Noncommunicable disease burden among conflict-affected adults in Ukraine: a cross-sectional study of prevalence, risk factors, and effect of conflict on severity of disease and access to care. *PLoS ONE* 15 (4), e0231899.
- Grundy, J., Biggs, B.A., 2019. The impact of conflict on immunisation coverage in 16 Countries. *Int. J. Health Policy Manag* 8 (4), 211–221.
- Guerrier, G., Zounoun, M., Delarosa, O., Defourny, I., Lacharite, M., Brown, V., et al., 2009. Malnutrition and mortality patterns among internally displaced and non-displaced population living in a camp, a village or a town in Eastern Chad. *PLoS ONE* 4 (11), e8077.
- Hakamies, N., Geissler, P.W., Borchert, M., 2008. Providing reproductive health care to internally displaced persons: barriers experienced by humanitarian agencies. *Reprod. Health Matters* 16 (31), 33–43.
- Hendrickx, M., Woodward, A., Fuhr, D.C., Sondorp, E., Roberts, B., 2020. The burden of mental disorders and access to mental health and psychosocial support services in Syria and among Syrian refugees in neighboring countries: a systematic review. *J. Public Health (Oxf)* 42 (3), e299–e310.
- Heudtlass, P., Speybroeck, N., Guha-Sapir, D., 2016. Excess mortality in refugees, internally displaced persons and resident populations in complex humanitarian emergencies (1998–2012) - insights from operational data. *Confl. Health* 10, 15.
- Huhn, G.D., Brown, J., Perea, W., Berthe, A., Otero, H., LiBeau, G., et al., 2006. Vaccination coverage survey versus administrative data in the assessment of mass yellow fever immunization in internally displaced persons—Liberia, 2004. *Vaccine* 24 (6), 730–737.
- Husain, F., Anderson, M., Lopes Cardozo, B., Becknell, K., Blanton, C., Araki, D., et al., 2011. Prevalence of war-related mental health conditions and association with displacement status in postwar Jaffna District, Sri Lanka. *JAMA* 306 (5), 522–531.
- IDMC, 2021. Global Report on Internal Displacement 2020. Internal Displacement Monitoring Centre, Geneva.
- Kaiser, B.N., Ticao, C., Boglosa, J., Minto, J., Chikwiramadara, C., Tucker, M., et al., 2020. Mental health and psychosocial support needs among people displaced by Boko Haram in Nigeria. *Glob Public Health* 15 (3), 358–371.
- Kearley, J., Oyebo, O., Shantikumar, S., Proto, W., McGranahan, M., Sabouni, A., et al., 2020. A systematic review of the burden of hypertension, access to services and patient views of hypertension in humanitarian crisis settings. *BMJ Glob. Health* 5 (11).
- Kehlenbrink, S., Smith, J., Ansbro, E., Fuhr, D.C., Cheung, A., Ratnayake, R., et al., 2019. The burden of diabetes and use of diabetes care in humanitarian crises in low-income and middle-income countries. *Lancet Diabetes Endocrinol* 7 (8), 638–647.
- Khaw, A.J., Salama, P., Burkholder, B., Dondero, T.J., 2000. HIV risk and prevention in emergency-affected populations: a review. *Disasters* 24 (3), 181–197.
- Khouzam, A., Verma, M., 2020. Internal displacement and COVID-19: taking stock and looking forward. *Refugee Surv. Quartel.* 39 (4), 591–601.
- Kim, A.A., Malele, F., Kaiser, R., Mama, N., Kinkela, T., Mantshumba, J.C., et al., 2009. HIV infection among internally displaced women and women residing in river populations along the Congo River, Democratic Republic of Congo. *AIDS Behav.* 13 (5), 914–920.
- Kimbrough, W., Saliba, V., Dahab, M., Haskew, C., Checchi, F., 2012. The burden of tuberculosis in crisis-affected populations: a systematic review. *Lancet Infect. Dis.* 12 (12), 950–965.
- Kizza, D., Hjelmeland, H., Kinyanda, E., Knizek, B.L., 2012. Alcohol and suicide in post-conflict northern Uganda: a qualitative psychological autopsy study. *Crisis* 33 (2), 95–105.
- Kouadio, I.K., Kamigaki, T., Oshitani, H., 2010. Measles outbreaks in displaced populations: a review of transmission, morbidity and mortality associated factors. *BMC Int. Health Hum. Rights* 10, 5.
- Lafta, R., Aflouk, N.A., Dhiaa, S., Lyles, E., Burnham, G., 2016. Needs of Internally Displaced Women and Children in Baghdad, Karbala, and Kirkuk, Iraq. *PLoS Curr* 8.
- Lagos-Gallego, M., Gutierrez-Segura, J.C., Lagos-Grisales, G.J., Rodriguez-Morales, A.J., 2017. Post-traumatic stress disorder in internally displaced people of Colombia: an ecological study. *Travel. Med. Infect. Dis.* 16, 41–45.
- Lam, E., McCarthy, A., Brennan, M., 2015. Vaccine-preventable diseases in humanitarian emergencies among refugee and internally-displaced populations. *Hum. Vaccin. Immunother.* 11 (11), 2627–2636.
- Leus, X., Wallace, J., Loretti, A., 2001. Internally displaced persons. *Prehosp. Disaster. Med* 16 (3), 116–123.
- Madoro, D., Kerebih, H., Habtamu, Y., GT, M., Mokona, H., Molla, A., et al., 2020. Post-traumatic stress disorder and associated factors among internally displaced people in south ethiopia: a cross-sectional study. *Neuropsychiatr Dis Treat* 16, 2317–2326.
- Makhshvili, N., Chikovani, I., McKee, M., Bisson, J., Patel, V., Roberts, B., 2014. Mental disorders and their association with disability among internally displaced persons and returnees in Georgia. *J. Trauma Stress* 27 (5), 509–518.
- Martin-Canavate, R., Custodio, E., Yusuf, A., Molla, D., Fasbender, D., Kayitakire, F., 2020. Malnutrition and morbidity trends in Somalia between 2007 and 2016: results from 291 cross-sectional surveys. *BMJ Open* 10 (2), e033148.

- McGowan, C.R., Baxter, L., Deola, C., Gayford, M., Marston, C., Cummings, R., et al., 2020. Mobile clinics in humanitarian emergencies: a systematic review. *Confl. Health* 14, 4.
- Mendelsohn, J.B., Spiegel, P., Schilperoord, M., Cornier, N., Ross, D.A., 2014. Antiretroviral therapy for refugees and internally displaced persons: a call for equity. *PLoS Med.* 11 (6), e1001643.
- Morina, N., Akhtar, A., Barth, J., Schnyder, U., 2018. Psychiatric disorders in refugees and internally displaced persons after forced displacement: a systematic review. *Front. Psychiatry* 9, 433.
- Moya, A., Serneels, P., Desrosiers, A., Reyes, V., Herrera, M.J.T., Lieberman, A., 2020. Impact of COVID-19 On Maternal Mental Health in a Fragile and Conflict-Affected Setting: A Longitudinal Case-Control Study in Tumaco. SSRN, Colombia.
- Muhjazi, G., Gabrielli, A.F., Ruiz-Postigo, J.A., Atta, H., Osman, M., Bashour, H., et al., 2019. Cutaneous leishmaniasis in Syria: a review of available data during the war years: 2011–2018. *PLoS Negl. Trop. Dis* 13 (12), e0007827.
- Mullany, L.C., Lee, C.I., Paw, P., Shwe Oo, E.K., Maung, C., Kuiper, H., et al., 2008. The MOM Project: delivering maternal health services among internally displaced populations in eastern Burma. *Reprod. Health Matters* 16 (31), 44–56.
- Mullany, L.C., Richards, A.K., Lee, C.I., Suwanvanichkij, V., Maung, C., Mahn, M., et al., 2007. Population-based survey methods to quantify associations between human rights violations and health outcomes among internally displaced persons in eastern Burma. *J. Epidemiol. Commun. Health* 61 (10), 908–914.
- Munn, Z., Peters, M.D.J., Stern, C., Tufanaru, C., McArthur, A., Aromataris, E., 2018. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med. Res. Methodol.* 18 (1), 143.
- Nakimuli-Mpungu, E., Okello, J., Kinyanda, E., Alderman, S., Nakku, J., Alderman, J.S., et al., 2013. The impact of group counseling on depression, post-traumatic stress and function outcomes: a prospective comparison study in the Peter C. Alderman trauma clinics in northern Uganda. *J. Affect. Disord.* 151 (1), 78–84.
- Nidzvetska, S., Rodriguez-Llanes, J.M., Aujoulat, I., Gil Cuesta, J., Tappis, H., van Loenhout, J.A., et al., 2017. Maternal and child health of internally displaced persons in Ukraine: a qualitative study. *Int. J. Environ. Res. Public Health* 14 (1).
- Oladeji, O., Campbell, P., Jaiswal, C., Chamla, D., Oladeji, B., Ajumara, C.O., et al., 2019. Integrating immunisation services into nutrition sites to improve immunisation status of internally displaced persons' children living in Bentiu protection of civilian site, South Sudan. *Pan. Afr. Med. J.* 32, 28.
- Orendain, D.J.A., Djalante, R., 2021. Ignored and invisible: internally displaced persons (IDPs) in the face of COVID-19 pandemic. *Sustainab. Sci.* 16 (1), 337–340.
- Owoaje, E.T., Uchendu, O.C., Ajayi, T.O., Cadmus, E.O., 2016. A review of the health problems of internally displaced persons in Africa. *Nigerian Postgraduat. Med. J.* 23 (4).
- Peprah, D., Palmer, J.J., Rubin, G.J., Abubakar, A., Costa, A., Martin, S., et al., 2016. Perceptions of oral cholera vaccine and reasons for full, partial and non-acceptance during a humanitarian crisis in South Sudan. *Vaccine* 34 (33), 3823–3827.
- Pinto, A., Saeed, M., El Sakka, H., Rashford, A., Colombo, A., Valenciano, M., et al., 2005. Setting up an early warning system for epidemic-prone diseases in Darfur: a participative approach. *Disasters* 29 (4), 310–322.
- Porter, M., Haslam, N., 2005. Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: a meta-analysis. *JAMA* 294 (5), 602–612.
- Quintero, A., Culler, T., 2009. IDP health in Colombia: needs and challenges. *Forced Migr. Rev.* 33, 70–71.
- Rae, F., 2011. Border-controlled health inequality: the international community's neglect of internally displaced persons. *Med. Confl. Surviv.* 27 (1), 33–41.
- Ramachandran, A., Makhshvili, N., Javakhishvili, J., Karachevskyy, A., Kharchenko, N., Shpiker, M., et al., 2019. Alcohol use among conflict-affected persons in Ukraine: risk factors, coping and access to mental health services. *Eur. J. Public Health* 29 (6), 1141–1146.
- Reed, H., Sheftel, M.G., Behazin, A., 2018. Forced migration and patterns of mortality and morbidity. In: Hugo, G., Abbasi-Shavazi, M.E.K. (Eds.), *Demography of Refugee and Forced Migration International Studies in Population*. Springer, Cham vol 13.
- Richards, A., Ospina-Duque, J., Barrera-Valencia, M., Escobar-Rincón, J., Ardila-Gutiérrez, M., Metzler, T., et al., 2011. Posttraumatic stress disorder, anxiety and depression symptoms, and psychosocial treatment needs in Colombians internally displaced by armed conflict: a mixed-method evaluation. *Psychol. Trauma: Theory Res. Practice Policy* 3 (4), 384–393.
- Roberts, B., Felix Ocaka, K., Browne, J., Oyok, T., Sondorp, E., 2011. Alcohol disorder amongst forcibly displaced persons in northern Uganda. *Addict. Behav.* 36 (8), 870–873.
- Roberts, B., Makhshvili, N., Javakhishvili, J., Karachevskyy, A., Kharchenko, N., Shpiker, M., et al., 2019. Mental health care utilisation among internally displaced persons in Ukraine: results from a nation-wide survey. *Epidemiol Psychiatr Sci* 28 (1), 100–111.
- Roberts, B., Murphy, A., Chikovani, I., Makhshvili, N., Patel, V., McKee, M., 2014. Individual and community level risk-factors for alcohol use disorder among conflict-affected persons in Georgia. *PLoS ONE* 9 (5), e98299.
- Roberts, B., Ocaka, K.F., Browne, J., Oyok, T., Sondorp, E., 2008. Factors associated with post-traumatic stress disorder and depression amongst internally displaced persons in northern Uganda. *BMC Psychiatry* 8, 38.
- Roberts, B., Odong, V.N., Browne, J., Ocaka, K.F., Geissler, W., Sondorp, E., 2009. An exploration of social determinants of health amongst internally displaced persons in northern Uganda. *Confl. Health* 3, 10.
- Rodriguez-Morales, A.J., Bedoya-Arias, H.A., Sánchez-Ramírez, N., Bedoya-Arias, J.E., Hurtado-Hurtado, N., Almeida, A., et al., 2018a. Differences in the Incidence of Malaria between Internally Displaced People and General Population of Colombia from 2007 to 2016. *Int. J. Infect. Dis.* 73, 319–320.
- Rodriguez-Morales, A.J., Bonilla-Aldana, D.K., Bonilla-Aldana, J.C., Mondragon-Car-dona, A., 2019. Arboviral diseases among internally displaced people of Neiva, Colombia, 2015–2017. *J. Travel Med.* 26 (2).
- Rodriguez-Morales, A.J., Valencia-Salinas, M., Murillo-Abadia, J., Patiño-Barbosa, A.M., González-Colonia, C., Gutiérrez-Segura, J.C., et al., 2018b. Ascariasis among Internally Displaced People of Colombia, 2009–2016. *Int. J. Infect. Dis.* 73, 227.
- Salami, B., Iwuagwu, S., Amodu, O., Tulli, M., Ndikom, C., Gomaa, H., et al., 2020. The health of internally displaced children in sub-Saharan Africa: a scoping review. *BMJ Glob Health* 5 (8).
- Schmidt, M., Kravic, N., Ehlert, U., 2008. Adjustment to trauma exposure in refugee, displaced, and non-displaced Bosnian women. *Arch Womens Ment Health* 11 (4), 269–276.
- Seguin, M., Lewis, R., Razmadze, M., Amirejibi, T., Roberts, B., 2017. Coping strategies of internally displaced women in Georgia: a qualitative study. *Soc. Sci. Med.* 194, 34–41.
- Sheikh, T.L., Abdulaziz, M., Agunbiade, S., Joseph, I., Ebiti, B., Adekeye, O., 2015. Correlates of depression among internally displaced persons after post-election violence in Kaduna, North Western Nigeria. *J. Affect. Disord.* 170, 46–51.
- Singh, N.S., Bass, J., Sumbadze, N., Rebok, G., Perrin, P., Paichadze, N., et al., 2018. Identifying mental health problems and Idioms of distress among older adult internally displaced persons in Georgia. *Soc. Sci. Med.* 211, 39–47.
- Singh, S., Sharma, S.P., Mills, E., Poudel, K.C., Jimba, M., 2007. Conflict induced internal displacement in Nepal. *Med. Confl. Surviv.* 23 (2), 103–110.
- Siriwardhana, C., Adikari, A., Pannala, G., Siribaddana, S., Abas, M., Sumathipala, A., et al., 2013. Prolonged internal displacement and common mental disorders in Sri Lanka: the COMRAID study. *PLoS ONE* 8 (5), e64742.
- Siriwardhana, C., Ali, S.S., Roberts, B., Stewart, R., 2014. A systematic review of resilience and mental health outcomes of conflict-driven adult forced migrants. *Confl. Health* 8, 13.
- Spencer, S., Grant, A.D., Piola, P., Tukpo, K., Okia, M., Garcia, M., et al., 2004. Malaria in camps for internally-displaced persons in Uganda: evaluation of an insecticide-treated bednet distribution programme. *Trans. R. Soc. Trop. Med. Hyg.* 98 (12), 719–727.
- Spiegel, P., Sheik, M., Gotway-Crawford, C., Salama, P., 2002. Health programmes and policies associated with decreased mortality in displaced people in postemergency phase camps: a retrospective study. *Lancet* 360 (9349), 1927–1934.
- Summers, A., Bilukha, O.O., 2018. Suboptimal infant and young child feeding practices among internally displaced persons during conflict in eastern Ukraine. *Public Health Nutr.* 21 (5), 917–926.
- Tekeli-Yesil, S., Isik, E., Unal, Y., Aljomaa Almossa, F., Konsuk Unlu, H., Aker, A.T., 2018. Determinants of mental disorders in syrian refugees in turkey versus internally displaced persons in Syria. *Am. J. Public Health* 108 (7), 938–945.
- Teleb, N., Hajjeh, R., 2017. Vaccine preventable diseases and immunization during humanitarian emergencies: challenges and lessons learned from the Eastern Mediterranean Region (Editorial). *East Mediterr. Health J.* 22 (11), 775–777.
- Thapa, S.B., Hauff, E., 2005. Psychological distress among displaced persons during an armed conflict in Nepal. *Soc. Psychiatry Psychiatr. Epidemiol.* 40 (8), 672–679.
- Turnip, S.S., Hauff, E., 2007. Household roles, poverty and psychological distress in internally displaced persons affected by violent conflicts in Indonesia. *Soc. Psychiatry Psychiatr. Epidemiol.* 42 (12), 997–1004.
- UNCHR, 1998. *Guiding Principles on Internal Displacement*. UNCHR, Geneva E/CN.4/1998/53/Add.2, Annex ('Guiding Principles' hereafter), Introduction, paragraph 3. Geneva; 1988.
- UNHCR, 2021. *Global Trends in Forced Displacement in 2020*. UNHCR, Geneva.
- van Berlaer, G., Elsafti, A.M., Al Safadi, M., Souhli Saeed, S., Buyl, R., Debacker, M., et al., 2017. Diagnoses, infections and injuries in Northern Syrian children during the civil war: a cross-sectional study. *PLoS ONE* 12 (9), e0182770.
- Vernier, L., Cramond, V., Hoetjes, M., Lenglet, A., Hoare, T., Malaeb, R., et al., 2019. High levels of mortality, exposure to violence and psychological distress experienced by the internally displaced population of Ein Issa camp prior to and during their displacement in Northeast Syria, November 2017. *Confl. Health* 13, 33.
- Villamizar-Pena, R., Gutierrez-Ocampo, E., Holguin-Rivera, Y., Agudelo-Mejia, K., Cortes-Gutierrez, M., Sossa-Pinzon, L., et al., 2021. Leishmaniasis among internally displaced people of Colombia, 2007–2018 - A comparative analysis with the general population. *Travel. Med. Infect. Dis.* 41, 102043.
- World Bank, 2017. *Forcibly Displaced: Toward a Development Approach Supporting Refugees, the Internally Displaced, and Their Hosts*. World Bank, Washington D.C.
- Zhou, G., Lo, E., Zhong, D., Wang, X., Wang, Y., Malla, S., et al., 2016. Impact of interventions on malaria in internally displaced persons along the China–Myanmar border: 2011–2014. *Malar. J.* 15 (1), 471.