Refugee Children and their Families: The Bigger Picture

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Introduction

Humanitarian workers can begin to appreciate the situation of refugee children and their families by trying to understand the context of their current situation. The purpose of this book is to offer a perspective to humanitarian work that moves away from programs that are designed as short-term crisis-fighting or narrow-scoped, towards a life-cycle view that considers a broader context of refugee health. This book is not intended to be a comprehensive textbook of all topics and conditions, but a practical guide and toolkit on child and family health for humanitarian workers from all backgrounds, with any level of experience.

This book is about children. While doing humanitarian work and making decisions in the field, we often ask ourselves the question often, "Is this what's best for these children?"

Migration is not a new phenomenon. Virtually all human populations have some history of migration or ancestors who have migrated, whether to find better land or livelihoods, or to escape adverse conditions. Anyone who has migrated has experienced at least three phases: the setting that they lived in predeparture, a journey, and a place of arrival or settlement, be that temporary or permanent. Journeys may last anywhere from a few hours to decades, and most involve stops en route. Every refugee's experience is different.

Refugee health settings are hugely diverse, and each refugee's perception of their particular setting will be unique. Working in this field you may engage with refugees who still consider themselves to be in the journey phase, whether they are

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temporarily settled or they are making a short stop during travel. Some refugees may consider that they have arrived at their destination, whether or not they have a secure home, family contacts, legal status, or income. Some may have settled in a new place for decades, but still regard this as temporary, hoping to return home one day.

The term "migrant" is an umbrella term for people who leave their usual residence to live in another place, for any reason. Categorizing individuals according to their "nation," "race" or other cultural or political definition risks racism, political abuse, or discrimination. Similarly, attempting to categorize people according to their reasons for migration, e.g., as an "economic" migrant, could be both artificial, because migration is rarely caused by one factor alone, and unhelpful, because it risks implying that some reasons for migration are more valid than others. Similarly, it is important to recognize that forced and voluntary migration are two ends of a spectrum and in most cases both choice and necessity influence the decision to migrate [1].

Recognizing this, the narrative in this book advocates for understanding individual children according to their unique experiences, vulnerabilities, and health needs. Barriers to living a healthy lifestyle and accessing appropriate and effective health care are not only determined by different personal factors, but also how their community and society recognize and respond to their health and social needs.

The decision to leave home is not one that is taken lightly. A person may decide to migrate in order to find a livelihood and a standard of living for him/her/themself and family that he/she/they deem acceptable, or in order to avoid the threat of death from a natural or human-made disaster. Regardless of the cause or multiple causes, humanitarian workers should focus on migrants' vulnerabilities, health needs, and wider advocacy needs.

As humanitarian workers, we will meet refugee children and their families at some point along their journey, in different settings. Such settings are aligned along the trajectory of the journey but may overlap. Settings include:

- Within the immediate humanitarian post-disaster setting—which can be man-made (e.g., war) or natural (e.g., earthquake).
- Along the journey (displacement inside/outside own country, while moving on foot, by car, boat, or plane).
- During initial or preliminary settlement (such as makeshift, evolving camps).
- Living in more established settlements (which may persist over decades).
- In permanent resettlement in host countries, or permanent return/repatriation.

Each of these settings comes with different risks and vulnerabilities, health needs, and barriers to accessing health care that humanitarian workers need to consider (Table 1.1).

This chapter briefly examines how drivers of good and ill health in individual people, local communities, and wider society affect the health of children over their lifetimes, in particular refugee children who may be in more unfortunate circumstances. This may be a somewhat fluid framework—all levels of each of these drivers extensively interact with other drivers, at every level. Figure 1.1 describes these interactions.

Table 1.1 Overview of different settings in which you may work with refugees and some of the health needs, vulnerabilities, and barriers to accessing healthcare that may be experienced in such a setting

Setting	Detail	Exposures/vulnerabilities	Specific health needs	Barriers to accessing care
Humanitarian disaster setting	An event or a series of events causes societal breakdown and a humanitarian disaster. People may migrate from, through, or to zones affected by humanitarian disasters.	Threat of violence may be ongoing Access to resources including water, food, sanitation, and shelter, may be restricted Instability and fear of violence, e.g., nearby shelling	Violence and unsafe living conditions may lead to traumatic injuries Mental health problems Vulnerability to malnutrition, dehydration Vaccine preventable diseases may occur locally	Breakdown of local health infrastructure Insecurity limiting freedom of movement
During flight (land, sea, or air)	Rescue boats are the most well-known example of healthcare provision during flight, e.g., MSF boats rescuing migrants from the sea or unsafe vessels in the Mediterranean Sea	Unsafe Sea crossings Unsafe travel in vehicles for extended time periods, e.g., excess exposure to fumes, dehydration, or musculoskeletal pain/injuries Risk physical, sexual, and psychological abuse, including from traffickers	Dehydration Malnutrition Communicable diseases due to extended close proximity and lack of hygieneconsequences of physical, sexual, and psychological abusemental health problems	Few health services available Lack of continuity of care between providers Access to secondary care particularly limited Translation services less likely to have been established

(continued)

Table 1.1 (continued)

Setting	Detail	Exposures/vulnerabilities	Specific health needs	Barriers to accessing care
Newly established/ evolving camps/ informal settlements	New camps may be set up when there is a developing crisis causing mass migration, or where influx of refugees is ongoing and existing camps no longer have space for new arrivals In some locations, informal camps exist for many years without recognition or support from authorities	Often lack basic facilities, including shelter, safe drinking water, cooking equipment, and sanitation Physical access routes and arranging nearby accommodation for NGO workers may be difficult Newer camps may have few or no NGOs supporting their work	Communicable disease Malnutrition Dehydration	Health services less likely to be established in newer camps/informal settlementshealth promotion and sexual and reproductive health services in particular may be lacking Lack of access to previous healthcare records Access to secondary care may be limited Language barriers may be a problem, especially if addressing mental health, stigmatized or intimate problems
Established refugee camps	Established camps have varying levels of support from government and nonstate actors	Close living conditions, lack of accessibility or acceptability of WASH facilities, adequate shelter, and cooking facilities may be ongoing	Mental health problems may be compounded by uncertainty about the future and lack of occupation/educational opportunities Substance misuse Domestic violence	Language and knowledge barriers to accessing health care. Formal and informal restrictions imposed in host country to access health care

Dispersed in a rural or urban setting	Relocation programs may send refugees to homes in urban or rural settings. This may be part of "permanent resettlement" or may be temporary. Experiences of refugees there may vary greatly depending on the number of refugees sent, local community attitudes, employment or education opportunities, etc.	Living conditions and shelter may vary in quality—Risk of extremes of heat, cold and damp Discrimination, re-traumatization Integration is a challenge, and lack of occupation or other means of community engagement is a risk to mental and physical health	Mental health problems, particularly where refugees are isolated, and/or receive negative reactions from the local community Malnutrition Mental health Usual risks of urban locations—Inactivity, air pollution, poor diet cardiovascular problems	Lack of knowledge of local health systems Language barriers Financial barriers

Fig. 1.1 Wider determinants of health for refugee children and their families (graph courtesy of Robert Cooper)

What Are the Drivers of Good and Ill Health in Refugee Children and their Families?

Figure 1.1 provides a framework for understanding the factors that influence health in refugee children and families. This framework aims to put determinants of health in a wider context, illustrating that holistic (i.e., considering physical, emotional, mental, environmental, social, political, economic drivers) and long-term (i.e., over a lifetime and intergenerational) perspectives are needed to best serve the health and well-being of refugee families. This involves alleviating acute suffering, practicing preventative medicine, and strongly advocating for social, political, and economic changes that benefit refugees, or obviates the factors that result in forced

displacement. This book will explore these aspects in more detail. Here we outline some of the important aspects that determine child refugee health at an individual, family, and community level, and in the wider global context.

The Child, their Family, and Community

Child development can be described as the sequence of physical, emotional, and psychological changes that occur between conception and completion of adolescence [2–4]. The nutritional status, physical, mental, and emotional health of a woman preconception and during pregnancy is crucial for the lifelong health of her child. Development can be described as a continuum where the largest leaps are made early in life, with further development building on and determined by early developmental progress. Missing out on early developmental opportunities, or exposure to detrimental events at an early stage may have a lifelong impact on physical health, cognitive abilities, social status and quality of life, and may also affect the next generation.

The degree to which young people grow up to become physically, mentally, and emotionally strong depends on complex, interacting intrinsic and extrinsic factors experienced during childhood. Intrinsic factors include those that a child is born with, such as their physical health at birth and their genetics, which may predispose them to illness, but also the way their brain works, their character, and even experiences in utero. The speed and scope of a child's development are controlled by genetic (the structure of the DNA) and epigenetic (the way genes are switched on and off) factors. Environmental factors can also influence child development in a promoting as well as an inhibitory way.

Environmental factors are key to promoting healthy development and allowing children to excel, feel fulfilled and happy, feel part of their family and society, and achieve in education in childhood and employment in adult life. Examples of supportive environmental factors include:

- Care and love from parents or caregivers.
- Predictable routines for meals, sleep, play, and personal hygiene.
- Rules and discipline without harshness, and caregivers responding predictably.
- Adequate housing, nutrition, sanitation, health care, and security.
- Access to education and facilitation of socialization.

On the other hand, individual factors as well as environmental conditions can hinder the full attainment of a child's genetic potential. This includes poor antenatal health and inadequate care of the mother, adverse events in pregnancy and childhood, or sustained adverse environmental conditions such as poverty, discrimination, poor physical and mental health, and malnutrition of children or their caregivers.

Family, community, and society's perspectives on health greatly influence the treatment of childhood diseases, developmental disability, and chronic illness, and

can vary widely in different societies—which can be difficult to grasp for humanitarian workers with a "Western" perspective on health. As an example, in some societies developmental delay, incurable chronic diseases or genetic syndromes may not be regarded as a health problem—merely as individual needs that require extra help, care, compassion, and love from the family and the community. There are countries where families hide children who have disabilities such as hydrocephalus. There are others where communities blame parents for congenital conditions such as Down syndrome. Regardless of the particular country of origin, in the refugee situation, family and community networks often break down, making these children more vulnerable.

The health of the mother has a major influence on the future health and life prospects of her children. During pregnancy, maternal malnutrition, iron deficiency anemia and vitamin deficiencies, smoking, alcohol, and drug use all affect the growth, health, and long-term quality of life of her child. After birth, lack of food for the mother or the child, feeding problems, recurrent infections, postnatal depression, and problems with bonding and attachment can result in adverse physical and mental health outcomes, manifesting throughout a child's lifetime. The Developmental Origins of Health and Disease hypothesis [5] has emphasized the particular importance of the first 1000 days of life (from the point of conception) for life expectancy and chronic disease risk. Providing optimal nutrition, health care, and disease prevention (e.g., vaccination) during this time period offers a child the best start in life. Studies have shown that not meeting these basic needs may predispose to problems such as early heart disease and death. Stable families and communities can mitigate some of these effects even in the face of poverty. Displacement, however, often disrupts family and community structures, making families and their children more vulnerable.

Infections early in life can also result in malnutrition and thus negatively impact a child's cognitive, mental, emotional, and physical development. Early weaning from breastfeeding, breastfeeding failure, or bottle feeding in living conditions where good hygiene could not be maintained can result in recurrent gastrointestinal infections, malnutrition, stunting, and impaired cognitive abilities [6, 7]. These children may grow up to become undernourished parents, trapped in the same cycle with their own children. The right amount of macronutrients (e.g., protein, fats, and carbohydrates) and micronutrients (e.g., iron, vitamins) during pregnancy, breastfeeding, and early childhood is critical for normal and optimal brain development. If a mother is undernourished or has iron or vitamin deficiency, babies can be born small and their brain development can already be impaired in utero. Infections such as gastroenteritis in the first year of life result in higher energy consumption, but also malabsorption of macro- and micronutrients, promoting malnutrition. Nutrients are also essential for a healthy immune system development; malnutrition weakens the immune system resulting in a vicious cycle of infection/malnutrition, and impaired cognitive and physical development. This is why the promotion of breastfeeding and vaccination against infections (e.g., rotavirus, measles) are so critical in early childhood to move health provision from emergency care to care with a more preventative and long-term perspective.

The microbiome is the community of microorganisms that naturally colonizes our skin, respiratory, and intestinal tracts. Recent research highlights the importance of the microbiome not only for the digestion of nutrients but also the health of the immune system [8–11]. Introducing "healthy" bacteria early, e.g., through early and sustained breastfeeding, shapes both the microbiome and the immune system in a way that it becomes more resistant to intestinal infections, hence preventing malnutrition from recurrent gastroenteritis. Early disruption (in the first year of life) of microbiome development, e.g., by early bottle feeding, recurrent gastrointestinal infections, or unnecessary use of antibiotics is associated with adverse long-term health outcomes.

As for extrinsic factors, disaster and flight are hugely disruptive to a child's emotional well-being, and in this situation stabilizing factors such as an intact family or community are also often disrupted. Prolonged hardships such as flight, displacement, loss, poverty, and discrimination can result in progressive erosion of resilience. The concept of Adverse Childhood Experiences (ACEs) can be used to describe such events, experiences, and their long-term effects on health and well-being. ACEs are defined as traumatic experiences that occur in childhood; these can be acute events or "toxic stress" sustained over a long period of time. The hypothesis of ACEs is that early trauma has neurobiological effects on the developing brain, predisposing the child to adverse physical and mental health outcomes later in life in a dose-response pattern (e.g., the more ACEs, the worse health is affected) [12]. Research studies have linked the presence of ACEs to many physical (e.g., diabetes, heart disease, obesity, cancer) and mental health problems (anxiety, depression, low life satisfaction, low mental health self-rating, delinquency, violent behavior, suicide risk) in later life [13]. ACEs are presumed to affect genetic expression and epigenetics through physical stress signals via the hypothalmo-pituitary-adrenal axis, effects that can be long-lasting and even passed on through generations [14], which demonstrates how vital it is to prevent exposure to ACEs where possible.

The effect of ACEs on refugee and asylum-seeking children and adults are less well studied, but results from various countries, including non-Western and low-income regions, replicate the findings of large ACEs studies [15–18]. Refugee children are not only exposed to the same stressors as non-displaced populations but often have additional ACEs related to their situation, such as direct exposure (seeing or being a victim of or forced perpetrator of violence, loss of close family members and friends, loss of home, loss of education). Many have florid PTSD. These exposures are strongly related to adverse physical outcomes (i.e., heart disease, respiratory disease) and mental health outcomes (i.e., depression, suicidal ideations, PTSD, antisocial and aggressive behavior) as well as risk-taking lifestyle choices (e.g., alcohol and drug use).

A Wider Perspective on Health: Globalization and Refugee Health

No human being lives in total isolation. To a large degree, our thinking, behavior, health, and well-being are determined by the societal context we are living in. Early

humans were shaped by their local community and immediate fight for survival; currently, an economy that is increasingly globalized shapes societies around the globe. The last 200 years have brought enormous technological advances. In recent decades, the digital revolution and an economy dominated by free trade ideology have resulted in the removal of trade barriers and increased communication, which impact individuals' and societies' health.

Global Change and Health

It is important to have a closer look at how globalization shapes health and healthcare. International borders exist to limit the flows of goods and people between regions under different jurisdictions, but not all transborder crossings can be regulated. Globalization is the process of borders becoming more porous, be that through the flow of materials, financial capital, information, people, or animals.

Globalization brings increasing interdependence and complexity as our everyday activities are affected by and have an increasing effect on a wider scope of factors and actors [19]. This comes with a sense of responsibility for communities and people far away. Awareness of this responsibility may motivate some to work in global health or refugee health.

How does the global change we are experiencing result in increased migration? While there remains controversy over the benefits and disadvantages of globalization, on one hand, increased international trade and advances in transport capacity and information technology have brought unprecedented economic growth in both developed and developing countries. The economy of many poor countries has substantially improved, allowing them to invest more in infrastructure and health. The Internet allows rapid exchange of information and ideas, breaking down cultural barriers. Transportation has gained capacity and speed while becoming cheaper, thus bringing the world closer together. In general, access to healthcare has improved in many low-income countries, in particular in urban areas, as has food security through trade and increased productivity.

Critics of globalization, however, argue that it reinforces inequality and strengthens the already powerful large global companies, which can force open and control the economy of poorer countries, resulting in an increasing gap between poor and rich. These greater inequalities may lead to a weakened democracy, political entanglements in worker's rights, and undermining of social welfare and access to healthcare. Healthcare in many low-income countries has become privatized and unaffordable, and removal of trade barriers has resulted in the weakening of vital local food production, dependence on food imports from large multinational companies, and promotion of an unhealthy lifestyle (e.g., increased access to processed food, tobacco, and alcohol). Poverty is the strongest predictor of ill health and mortality in any society. The increasing gap between the rich and poor can be observed in all countries, even the wealthiest. Breakdown of these social safeguards lead to conflict, both within and between societies; and conflict becoming one of the strongest drivers for migration. People always have moved, and always will move to find resources, work, safety, education, food, and freedom.

Climate Change and Environmental Degradation

While disasters such as earthquakes and volcanic eruptions are genuinely natural, many of the floods and storms that have led to the displacement of people in recent years are the result of climate change, a man-made disaster. Climate change, the result of the increasing concentration of greenhouse gases in the Earth's atmosphere, is intrinsically linked to globalization. The destruction of natural habitats and biodiversity, and increased use of fossil fuels have accelerated in line with the increase in free trade, travel and transport, and deregulation of markets particularly in developing countries. This has resulted in increased exploitation of the natural resources that form the basis of all life on Earth.

Environments and ecosystems exist in a constant state of flux, however, particularly consequential for human societies and human migration are variations outside of the normal range, which overwhelm usual homeostatic systems and cause extreme, irreversible changes, with effects on resource availability and/or the safety of environments. The loss of biodiversity, for example, can lead to the collapse of ecosystems and resultant food insecurity, such as through loss of insects which pollinate 35% of crops that we consume [20, 21]. Another domain is atmospheric greenhouse gas concentrations, where we have already breached safe limits.

All of these environmental issues are highly relevant to migration because loss of lands and livelihoods and social, economic, and political upheaval all affect decisions to migrate, as well as experiences during migration and after resettlement. The UN estimated that one aspect of climate change alone, climate disasters, caused around 17 million people to be displaced in 2018.

In 2001, for the first time, the number of refugees displaced due to environmental issues was higher than the number displaced due to war and conflict [22]. Environmental changes are causing migration both by directly destroying homes and livelihoods, and through impacts on and interaction with other social, economic, political, and cultural factors. Direct impacts of climate change which cause migration include natural disasters such as flooding, hurricanes, and bush fires causing loss of homes and livelihoods, sea-level rise causing loss of homes or salination of freshwater causing loss of livelihoods for people who depend on freshwater fishing, and changes to environmental conditions affecting crop survival and yields causing loss of livelihood or starvation. Pathways through which environmental change causes migration indirectly may involve conflict over resource scarcity, unemployment, or famine. The World Bank estimated that climate change would push over 100 million people into poverty over 15 years [23].

The interactions between environmental change and migration are multiple and multidirectional. Migration itself has significant environmental impacts, related to the breakdown of social structures and governmental systems, resource use, and waste production. In mass displacement of populations, their journey and relocation may be through and to locations where systems are not in place to manage large and concentrated human impacts. Areas may need to be cleared to make space for dwellings. Even basic sanitation and waste disposal systems are usually lacking at the point of arrival of a large refugee population and may take some time to establish,

which can result in local environmental degradation. It is important to ensure that blame is avoided and that the environmental impacts of refugee settlements are seen in context. Refugees themselves often do not have resources and choices to avoid negative environmental impacts, and this problem is solvable or avoidable with planning and resources from governments and/or local or international NGOs. While local environmental impacts can be significant, the environmental footprint of a refugee living with very few resources is a tiny fraction of the footprint of the average person living in a high- or middle-income country setting. Humanitarian actors are beginning to recognize this and actions to mitigate this effect are emerging [24].

Summary

Returning to the child in front of us in a refugee camp clinic, what can we bring to this setting from having looked at the wider context? Firstly, we need to consider the lifetime perspective of the refugee child and their family. Humanitarian settings are often focused on relieving immediate health needs, which is important and the right thing to do. However, we best serve children's physical and mental health if we promote healthy living conditions, supportive relationships, healthy nutrition, development and play, education, and regular healthcare including vaccinations. Children can only grow up healthy if their caregivers are healthy—ensuring they are in the best state to look after their children well is one of the strongest interventions.

Secondly, and equally important, as humanitarian workers we need to be advocates for a healthier and more just world. On a global scale, children are among the most vulnerable and neglected groups of people, and yet many humanitarian settings focus primarily on adults. We have a duty to prioritize children's needs to ensure that they develop to their best capabilities, and one day take on this challenging world.

You will find these two lessons throughout every chapter of this book.

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Appendix 1: Refugee Children and their Families: The Bigger Picture

See Table 1.1

References

1. Schütte S, Gemenne F, Zaman M, Flahault A, Depoux A. Connecting planetary health, climate change, and migration. Lancet Planet Health. 2018;2(2):e58–9.
2. Shute RH, Slee PT. Child development: theories and critical perspectives. 2nd ed. Hove, UK: Routledge; 2015.

3. May P. Child development in practice. 1st ed. Oxon: Routledge; 2011.
4. Ertem IO, Dogan DG, Gok CG, Kizilates SU, Caliskan A, Atay G, et al. A guide for monitoring child development in low- and middle-income countries. Pediatrics. 2008;121(3):e581–9.
5. Barouki R, Gluckman PD, Grandjean P, Hanson M, Heindel JJ. Developmental origins of non-communicable disease: implications for research and public health. Environ Health. 2012;11:42.
6. Dawson-Hahn E, Pak-Gorstein S, Matheson J, Zhou C, Yun K, Scott K, et al. Growth trajectories of refugee and nonrefugee children in the United States. Pediatrics. 2016;138:6.
7. Lozoff B, Beard J, Connor J, Barbara F, Georgieff M, Schallert T. Long-lasting neural and behavioral effects of iron deficiency in infancy. Nutr Rev. 2006;64(5 Pt 2):S34–43. discussion S72-91
8. Olszak T, An D, Zeissig S, Vera MP, Richter J, Franke A, et al. Microbial exposure during early life has persistent effects on natural killer T cell function. Science. 2012;336(6080):489–93.
9. Hooper LV, Littman DR, Macpherson AJ. Interactions between the microbiota and the immune system. Science. 2012;336(6086):1268–73.
10. Rautava S, Luoto R, Salminen S, Isolauri E. Microbial contact during pregnancy, intestinal colonization and human disease. Nat Rev Gastroenterol Hepatol. 2012;9(10):565–76.
11. Robertson RC, Manges AR, Finlay BB, Prendergast AJ. The human microbiome and child growth—first 1000 days and beyond. Trends Microbiol. 2019;27(2):131–47.
12. Dube SR, Felitti VJ, Dong M, Giles WH, Anda RF. The impact of adverse childhood experiences on health problems: evidence from four birth cohorts dating back to 1900. Prev Med. 2003;37(3):268–77.
13. Hughes K, Bellis MA, Hardcastle KA, Sethi D, Butchart A, Mikton C, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. Lancet Public Health. 2017;2(8):e356–66.
14. Jiang S, Postovit L, Cattaneo A, Binder EB, Aitchison KJ. Epigenetic modifications in stress response genes associated with childhood trauma. Front Psych. 2019;10:808.
15. Opaas M, Varvin S. Relationships of childhood adverse experiences with mental health and quality of life at treatment start for adult refugees traumatized by pre-flight experiences of war and human rights violations. J Nerv Ment Dis. 2015;203(9):684–95.
16. Hanes G, Sung L, Mutch R, Cherian S. Adversity and resilience amongst resettling Western Australian paediatric refugees. J Paediatr Child Health. 2017;53(9):882–8.
17. Calam R. Public health implications and risks for children and families resettled after exposure to armed conflict and displacement. Scand J Public Health. 2017;45(3):209–11.
18. Dong M, Anda RF, Felitti VJ, Williamson DF, Dube SR, Brown DW, et al. Childhood residential mobility and multiple health risks during adolescence and adulthood: the hidden role of adverse childhood experiences. Arch Pediatr Adolesc Med. 2005;159(12):1104–10.
19. Lee K, Collin J. Global change and health. 1st ed. London: Open University Press; 2005. (Understanding Public Health)
20. Rockstrom J, Steffen W, Noone K, Persson A, Chapin FS, Lambin EF, et al. A safe operating space for humanity. Nature. 2009;461(7263):472–5.
21. Whitmee S, Haines A, Beyrer C, Boltz F, Capon AG, de Souza Dias BF, et al. Safeguarding human health in the Anthropocene epoch: report of the Rockefeller Foundation–lancet commission on planetary health. Lancet. 2015;386(10007):1973–2028.
22. Durkova P, Gromilova A, Kiss B, Plaku M. Climate refugees in the 21st century. 2012. United Nations.
23. Shock waves: managing the impacts of climate change on poverty—background papers [internet]. World Bank. [cited 2020 Nov 13]. https://www.worldbank.org/en/topic/climatechange/brief/shock-waves-managing-the-impacts-of-climate-change-on-poverty-background-papers
24. Environmental Impact Toolkit—MSF transformational investment capacity [internet]. [cited 2020 Nov 27]. https://msf-transformation.org/news/environmentalimpacttoolkit/

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