Minireview Article

Unveiling the HealthConcerns of Climate Migrants: A Narrative Review

ABSTRACT

Climate change has forced a significant population around the world to migrate from their homelands. People who migrate in the context of climate change experience a range of challenges and their health is one of the overlooked issues. The present study is a narrative review to identify the health implications of climate induced migration and to assess the healthcare system available for climate migrants. A systematic literature search was conducted on Scopus, PubMed, and Google Scholar databases. Ten full text research articles published between 2016 to 2023 were reviewed. The study finds that climate migrants face a multitude of physical, mental, and social health issues both at their origin and destination. Moreover, inadequate access to healthcare facilities exacerbates their health problems. Given the likelihood of climate related disasters to increase in the future, resulting in more climate migrants, it is imperative to address their health problems. This review makes an important contribution in this regard by attempting to synthesise the little but existing available literature on the health impacts of this vulnerable group.

Keywords:*climate migrants, climate change, climate-induced migration, health impact, healthcare system, climate-related disasters*

1.INTRODUCTION

Climate change is one of the biggest threats to humanity and presents a significant challenge for the future of our planet. Climate change can be described as a gradual change in global physical conditions that includes variations in atmospheric and oceanic temperatures, precipitation patterns, an increase in sea level, and shifts in seasonal weather patterns (Ahsan, 2019). There has been an average increase of 1°C in the Earth's surface temperature since pre-industrial levels (IPCC, 2018). This has led to extreme weather events, such as floods, droughts, heatwaves, cyclones, and desertification, that have impacted people across countries (Seneviratne *et al*., 2021). According to the Global Report on Internal Displacement 2022, over the past decade (2012 - 2021), approximately 230 million people were displaced due to climate-related disasters, and the year 2020 recorded the highest displacement of around 30.7 million people. In the year 2021, East Asia and the Pacific regions recorded the highest number of new displacements (12 million), followed by South Asia (9 million) and Sub - Saharan Africa (4 million). By 2050, it is estimated that climate change will displace more than 250 million people across the globe from their homelands (Heaney *et al*., 2015).

Several terms like climate migrants, climate refugees, environmentally displaced people, environmental migrants, etc., have been used in literature to address people who move from their native place due to climate-related or any other environmental disasters. Different definitions of climate migrants have been developed across disciplines as a result of the disagreement over what constitutes a climate migrant (Ridde*et al*., 2019). The International Organisation for Migration (IOM) in 2007 defined environmental migrants as “A person or group(s) of persons who, predominantly for reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are forced to leave their places of habitual residence, or choose to do so, either temporarily or permanently, and who move within or outside their country of origin or habitual residence”. Climate migrants are considered to be a sub category of environmental migrants who migrate in response to climate change related disasters. The movement of climate migrants could be short-term or long-term.Sudden environmental disasters like floods, tropical cyclones, and storms, though cause large-scale population displacement (Piguet *et al*., 2011), are generally considered to be short-term as people will be able to return to reconstruct their homes in the disaster susceptible area (Kliot, 2004). On the other hand, slow-onset climatic disasters like droughts, extreme temperatures, and salinization make the environment unsuitable for living, thereby encouraging long-term movement (Renaud *et al*., 2007; Cugusi and Piccarozzi, 2009). Although most people relocate within their own country, some individuals cross borders in search of better livelihoods (Brown, 2008).

People who migrate due to climate change suffer varied problems. Inadequate housing conditions, poor access to water and sanitation facilities, rise in infectious diseases (Kabir *et al*., 2016; Rahaman *et al*., 2018), food insecurity, and undernutrition (Toole, 2006) are all potential consequences that can be experienced by individuals who . Climate-induced migration can also amplify the possibility of ethnic and socioeconomic conflict, when the migrant population is perceived as “other” in their new destination (Burrows & Kinney, 2016). This kind of migration is often coercive as the current place of living can no longer sustain livelihoods (Brown, 2008). It has varying effects on individuals, households, and communities, contingent upon their unique characteristics of vulnerability and

resilience, such as age, gender, education, livelihood, income, language, and ethnicity (Schwerdtle *et al*., 2019). Health in the context of climate-induced migration is a complex issue that requires a comprehensive approach. Migrants who move in response to climate change experience a range of health problems at their place of origin, during transit, and upon reaching their destination (Schwerdtle *et al*., 2019). Nevertheless, the health challenges encountered by migrants upon reaching their destination are notably more severe than those encountered at the point of origin (Rahaman *et al*., 2018).

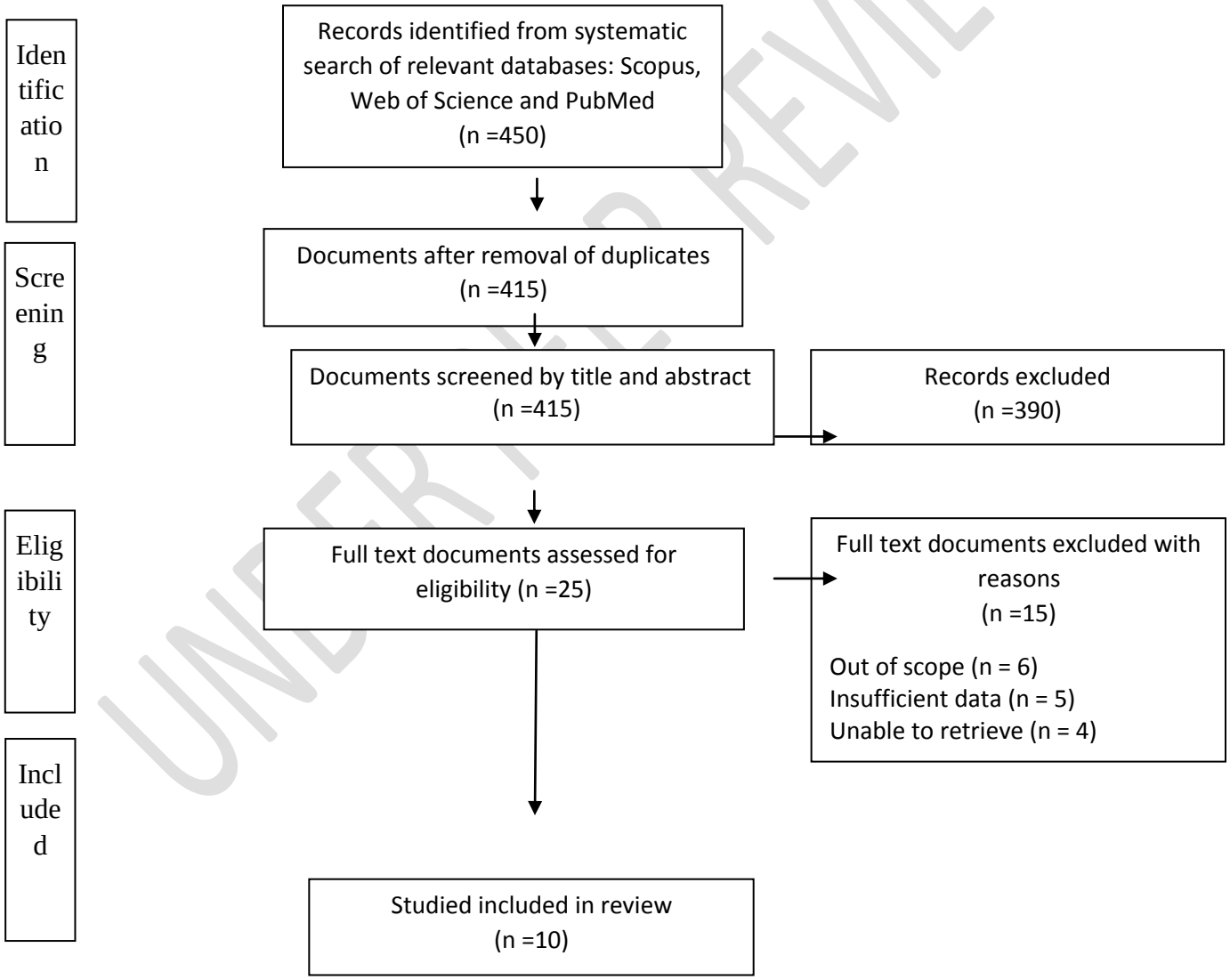
Though the relationship between climate change and migration (Myers, 2002; Nielsen *et al*., 2008; Kartiki, 2011; Morrissey, 2013; Piguet *et al*., 2018) and climate change and health (Martens *et al*., 1995; Kjellstrom and Weaver, 2009; Costello *et al*., 2009; Woodward *et al*., 2014; Watts *et al*., 2015;) are well documented, migration due to climate change with a focus on health and well-being is a topic that received less attention (Schwerdtle *et al*., 2018; McMichael, 2020). The issues of climate migrants always seem unaddressed, and due to lack of representation, they are often clubbed as illegal migrants without understanding their motive for migration. Now with climate-induced migration turning into a global crisis, displacing millions of people (Panda, 2010), it is important to understand the problems and challenges faced by climate migrants to develop strategies to manage the impacts of climate-induced migration effectively. This paper mainly focuses on the health problems faced by climate migrants. The main research question addressed in this paper is: "What are the different health impacts individuals face in the context of climate-induced migration?" The purpose of this paper is to provide a narrative review of the existing literature available on the health impacts of climate migrants and the healthcare system available for them.

2. METHODOLOGY

A literature search was conducted on Scopus, PubMed, and Google Scholar databases using the following keywords: "climate migrants", "climate refugees", "environmentally displaced people", "environmental migrants," "refugee health", "health risks", "climate change-induced migration" using conjunctions AND or OR. From the search result derived (first ten pages of search results), only those that fulfilled the following inclusion criteria were shortlisted. A date restriction of 2016 to 2023 was applied to capture the literature published after the UN Climate Change Conference (COP 21) held on December 12, 2015, in Paris. It was at this conference the word "migrants" in relation to climate change was formally included in the preamble of the agreement. Only original research articles published in English, related to health issues faced by climate migrants were considered. Other aspects of climate migrants were excluded from the study. Documents for which full text was not available were excluded. Based on these criteria, the titles and abstracts were screened, and the entire text of the relevant articles were reviewed. Figure 1 depicts The Preferred Reporting Items for Systematic reviews and Meta – Analyses (PRISMA) flow diagram for the article selection procedure for this review.

A total of 450 articles were identified initially though the search process and 415 were found after duplicates were removed. Upon further screening of title and abstract, articles that did not meet the inclusion criteria were excluded resulting in 25 documents eligible for full text screening. Following a rigorous full text screening process, 15 articles were excluded based on the reasons outlined in figure 1. The assessment yielded a total of 10 eligible studies that were included in this review. The studies included in the final analysis were conducted in different countries thus giving a global picture of the topic.The summary of each study is given inTable 1.

Figure 1. PRISMA flow diagram



3. FINDINGS

Displacement severely disrupts the lives of people affected and has differentiated impacts. The present study looks at the health impacts faced by climate migrants. From the literature review conducted, the health impacts faced by climate migrants are classified into three main dimensions: physical, mental, and social health impacts.

3.1 Physical health impacts of climate migrants

People displaced due to a disaster often settle in overcrowded informal urban settlements where water and sanitation facilities are insufficient, leading to a range of health problems (Rahaman *et al*., 2018). Climate migrants perceived the incidences of water-borne and vector-borne diseases to be higher in the relocated urban settlements (Chowdhury *et al*., 2020). For instance, diarrhoea and malaria were identified as the most common diseases among climate migrants living in the slums and squats of Bangladesh (Rahaman *et al*., 2018). People who migrate from coastal areas to urban areas experience health issues such as diabetes and tooth decay as a result of dietary changes (McMichael *et al*., 2023). Many migrants found their physical health to deteriorate in the new destination due to poor air and water quality, and those employed in hazardous working conditions suffered physical injury (Schwerdtle *et al*., 2021; Ngo *et al*., 2022). People displaced due to river bank erosion in Bangladesh suffered from high blood pressure, skin diseases and cardiovascular diseases due to their displacement to unhealthy places (Kaiser, 2023).

Women and girls are particularly vulnerable, facing sexual and reproductive health risks due to insecure living conditions that expose them to sexual violence, resulting in sexually transmitted diseases and teenage pregnancies (Trummer *et al*., 2023). Lindvall *et al*. 2020 in his study reported that malnutrition and lack of vaccination were significant problems faced by drought related migrants in Somalia, Kenya and Ethiopia. Poor housing, sanitation and hygiene in the displaced locations were identified as main causes of health risks among migrants in these countries. Climate variabilities like increase in temperature, heavy rainfall, floods, and other disasters are also attributed by migrants as a cause of health risks such as dengue, skin infection, headaches, and weakness both at origin and destination (Chowdhury *et al*., 2020; Ngo *et al*., 2022). Due to their origin in climate-vulnerable regions, many suffer from climate-sensitive illnesses like typhoid, dysentery, autoimmune disorders, malnutrition, and these health conditions are exacerbated due to the lack of proper medical facilities in the relocated areas (Rahaman *et al*. 2018).

3.2 Mental health impacts of climate migrants

Climate-induced migration is a forced migration that causes severe loss as it involves loss of personal goods, social life, known community, and familiarity (Shultz *et al*., 2019). This has devastating effects on psychological health and well-being. When people are displaced from their homes due to a climate-related disaster, it can result in psychological distress, trauma and may even trigger mental health conditions like depression and anxiety disorders (Shultz *et al*., 2019; Kaiser, 2023). Lack of social support, feelings of isolation, the responsibility of supporting families, uncertainty, and despair are some main reasons for poor mental health among migrants (Heany and Winter, 2016). Similar findings were reported by Schwerdtle *et al*. (2021) in their study of climate migrants in Bangladesh. The most vulnerable among climate migrants are women, the elderly, and children (Chowdhury *et al*., 2020). The numerous challenges they encounter throughout the migration process and social isolation they face upon reaching the destination can lead to long-lasting mental health consequences **(**Ngo *et al*., 2022).People affected by climate-related disasters suffer traumatic experiences both at the origin and destination (Schwerdtle *et al*.,2021). When natural disasters like floods, cyclones, and storms occur, the physical forces involved cause sudden shock and physical injury in individuals. The resulting displacement, hardships, and uncertainties in the aftermath of such disasters can further exacerbate stress levels (Shultz *et al*., 2019; Trummer *et al*., 2023). Lindvall *et al*. (2020) found mental health issues to be common among drought migrants in the Horn of Africa. Financial strains, unfavourable working conditions, and unhealthy living environments deteriorate the mental health of migrants (Ngo *et al*., 2022; McMichael *et al*., 2023).

Apart from tangible loss, climate migrants lose ties to their local communities and network of social support, adversely affecting their mental health (Shultz *et al*., 2019). Most feel lonely and homesick at the new destination (Heany and Winter, 2016; Kaiser, 2023). For some people, memories of home and catastrophic disaster experiences leave them with long-term mental health challenges (McMichael *et al*., 2023). Kaiser (2023) in his study found that many displaced people suffered insomnia as a result of frustration with their way of life, property and uncertainty about the future. Though mental health issues are common among climate migrants, these are primarily undiagnosed and therefore go untreated due to the stigma associated with seeking mental health services (Heany and Winter, 2016; Trummer *et al*., 2023). Many migrants feel that healthcare treatment will not have any impact on their mental health as they associate poor mental health with stressful and unfavourable living conditions, which can only be improved by improving the quality of their daily lives. (Heany and Winter, 2016).

3.3 Social health impacts of climate migrants

Migration in the context of climate change leads to social and cultural loss (Schwerdtle *et al*., 2021). This is because when people migrate, they leave their homeland, family relations, social ties, social status, and livelihood, bringing a loss that extends beyond material loss (Schwerdtle *et al*., 2021;

Shultz *et al*., 2019). The weakening of social capital in the aftermath of climate-related displacement makes it more difficult for people to cope with the challenges of migration and adapt to new environments (Chowdhury *et al*., 2020). McMichael *et al*., (2023) found that the relocation of migrants has weakened certain social structures, such as extended household systems, and decreased adherence to traditional laws. According to Heany and Winter (2016), a formal establishment such as a community centre where migrants can convene and address their concerns may significantly enhance their overall well-being.

3.4 Healthcare system for climate migrants

The most challenging problem faced by climate migrantspost-relocation is accessibility to healthcare services. Difficulty in navigating through the healthcare system, higher costs and geographic constraints are the main obstacles faced by migrants while trying to access healthcare in the new location (Schwerdtle *et al*., 2021; Kaiser, 2023). Other barriers like long wait times, lack of trust in healthcare providers (Heany and Winter, 2016) and lack of knowledge about healthcare options leads to underutilization of healthcare resources among migrants (Heany and Winter, 2016; Chowdhury *et al*., 2020; Lindvall *et al*., 2020). As a result of these challenges, migrants tend to rely on hospitals and medical services only in emergency situations (Schwerdtle *et al*., 2021). Moreover, conflicts between migrants and host communities also affect their access to medical services (Lindvall *et al*., 2020). In many cases, migrants resort to purchasing medications from local pharmacies without a doctor's prescription (Kaiser, 2023). Another significant challenge encountered by migrants is the lack of healthcare services for addressing issues related to mental health and gender-based violence (Lindvall *et al*., 2020).

Table 1. Summary of Studies included in review

Sl no	Author/Year	Study location	Type of Study	Objective	Mobility response	Climate hazard(s) discussed	Health problem (s) experienced
1	Heany and Winter, 2016,	Tanzania	Qualitative study	Explore the impact of climate driven migration on health and healthcare utilisation of migrants and non-migrants	Rural - Urban migration	Drought	Poor mental health
2	Rahaman *et al*., 2018,	Khulna City, Bangladesh	Qualitative and Quantitative study	Examine the health problems of climate migrants residing in the urban slums	Slum migration	Climate induced disasters (flood, cyclone, storms, sea level rise)	Physical health problems such as diarrhoea, malaria, typhoid, dysentery, autoimmune disorders, malnutrition.
3	Shultz *et al*., 2019,	Multiple locations- South Sudan, Vanuatu, Columbia	Case studies	Examine the impact of climate change induced population displacement on mental and psychosocial health of migrants	Forced migration	Climate variability and disasters	Psychological distress, mental disorders, trauma
4	Lindvall *et al*., 2020	Multiple locations- Somalia, Kenya, Ethiopia	Qualitative study	Explore the health status and healthcare needs of drought related migrants	Internal displacement	Drought	Malnutrition, high maternal, child and neonatal mortality rates, poor mental health, and gender-based violence.
5	Chowdhury *et al*., 2020	Bangladesh	Qualitative and Quantitative study	Understand the impact of climate change on health and health adaptation among displaced people in the coastal areas	Internal displacement	Climate variability and disasters (River bank erosion and cyclone)	Water borne diseases (skin disease, diarrhoea, cholera, jaundice, dysentery) and vector borne diseases (dengue, chikungunya, malaria)
6	Schwerdtle *et al*., 2021	Bangladesh	Qualitative study	Explore the challenges faced by climate migrants to meet their health needs	Rural - Urban migration	Extreme weather events (floods, storms, river erosion,	Deteriorating physical, mental, and social health.
7	Ngo *et al*.,	Vietnam	Qualitative stud	Explore the role of climate	Rural - Urban	Climate variability	Dengue, heat stress, skin

	2022		y	variability in migration and health status of migrants before and after migration	migration	(storms, floods, drought, increase in rainfall and temperature)	infections, frequent cold and flu and decline in mental health.
8	Trummer *et al*., 2023	Multiple locations in Africa	Webinar	Understand the interrelationship between climate change, migration, and health	Forced migration	Adverse climatic changes (main focus on drought and cyclone)	Diarrhoea, scabies, dehydration, undernutrition. Poor sexual and reproductive health and adverse mental health.
9	McMichael *et al*., 2023	Multiple locations - Fiji, Bangladesh, Burkina Faso	Case studies	Examine the connection between climate change, human mobility, and health effects	Planned relocation; rural - urban migration; seasonal labour migration	Climate induced disasters (Floods, cyclones, riverbank erosion, drought)	Lifestyle diseases like tooth decay and diabetes, long term mental health problems
10	Kaiser, 2023	Bangladesh	Qualitative and Quantitative study	Investigate the effects of river bank erosion on health and livelihood of internally displaced people	Internal displacement	River bank erosion	Physical health problems like skin disease, diarrhoea, malnutrition, high blood pressure. Mental health problems like anxiety, stress and depression

4. DISCUSSION

The aim of this study was to provide a narrative review of the health problems faced by climate migrants and the nature of healthcare available to them. For this, the study reviewed ten articles identified using the stages of PRISMA flow diagram. During the screening process it was found that though there are studies that have explored the different aspects of environmental migrants, research focussing on the health issues of climate migrants are scarce. The findings suggest that climate-induced migration is associated with various physical, mental, and social health problems that significantly impact the well-being of individuals and communities. Physical health problems such as infectious diseases, lifestyle diseases, malnutrition, and injuries were identified to be prevalent among climate migrants. These health issues often arise as a result of poor living circumstances, lack of access to safe drinking water and sanitation, and inadequate healthcare services in the areas where migrants are forced to relocate (Rahaman *et al*., 2018). The studies highlighted that woman, children and the elderly are extremely vulnerable to climate related migration problems. Migrants were also found to suffer from climate sensitive illnesses due to their origin in climate vulnerable areas. From the studies reviewed, it is observed that mental health problems are more profound and long-lasting among climate migrants. The psychological distress caused by the loss of homes and traditional livelihoods, coupled with the uncertainty of the future, takes a severe toll on the mental health of migrants. As a result, they are at a higher risk of developing post-traumatic stress disorder, depression, and other mental health conditions (Shultz *et al*., 2019; Kaiser, 2023).

Though migration is often seen as an adaptation strategy (Sherbinin *et al*., 2011; Gemenne and Blocher, 2017), it poses severe health hazards. It is found that poor access to healthcare and social isolation intensifies their health problems. The lack of proper recognition of climate migrants is a significant barrier to developing appropriate policies and programs to address their health concerns. It is important that public health interventions and policies for climate migrants must be based on the epidemiological profile and other demographics of the migrants. Addressing these health concerns, will not only improve the well-being of migrants but also contribute to building more resilient communities that can better adapt to the impacts of climate change. An important prerequisite for good health is timely and quality access to healthcare. Only few studies have discussed the healthcare accessibility and utilisation aspect of climate migrants. Those studies found that inadequate access to healthcare facilities is a major challenge climate migrants face post relocation. Moreover, the mental health needs of migrants are least taken care by the healthcare system. It is unprioritized as it is not considered to be directly saving lives. (Lindvall *et al*., 2020). This review included studies that examined the migration of individuals from different parts of the world due to climate change and the findings indicate that despite coming from diverse geographical regions, these migrant communities face common health problems such as infectious diseases, poor mental health, and limited access to healthcare. Therefore, it is crucial to acknowledge these health risks and urgent action must be taken to improve access to healthcare, prevent spread of infectious diseases and to provide mental health support. Furthermore, it is noted that there is a scarcity of research on the

resilience of healthcare system in the face of climate induced migration. Although studies have demonstrated the health effects of climate related migration, more research is needed to examine the capacity of healthcare systems to adapt to this phenomenon. Therefore, there is a pressing need for further research in this area to address these gaps.

5. CONCLUSION

Climate change is a global challenge of this century affectinghuman lives, ecosystems, and the environment. One of the direct and detrimental impacts of climate change is the displacement of people from their homes and communities, which is likely to increase in the future as the world faces more frequent and intense climate-related disasters. Based on the studies reviewed, it can be concluded that migration due to climate-related disasters is associated with significant health risks. In majority of situations, climate migrants may not be aware of how climate change affects their health and way of life (Ridde*et al*., 2019). The health impacts of migration due to climate change vary based on a range of factors like age, gender, and socio - economic status. Considering that climate change will lead to displacement or forced migration of a greater proportion of the global population, it is important to learn how migrant health can be protected. The ineffectiveness of the existing healthcare system in meeting the health needs of climate migrants and the lack of a legal framework to promote their welfare, calls for a comprehensive policy formulation. Given the significant challenges posed by climate induced migration, collaborative efforts between stakeholders from different sectors are needed to mitigate its impact. Interdisciplinary research that brings together experts from fields of health, migration and climate change is also required to fully understand and address the effects of climate induced migration.

Based on the literature review, this study makes the following suggestions for future policy formation on climate migrants. As the present health system is not inclusive of the health issues of climate migrants, a transition to climate resilient health system is required to effectively address the health concerns of this vulnerable population. This could involve developing new guidelines that take into account the specific needs of climate migrants. Secondly, a rights-based approach is necessary in the health governance framework to enable migrant communities to build healthy lives in the resettled locations. This can be done by ensuring that climate migrants have access to the same health services and facilities as other members of society and providing them with necessary resources and support. Thirdly, the government systems must ensure the development of public health infrastructure to manage communicable and non - communicable diseases. Investing in community-based healthcare and health education programs can also help climate migrants to better understand and manage their health.

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