

# Can Digital Health Improve Healthcare Access for Migrants

**Lei Hou, PhD, MPH**, NAM-HKU Fellow in of Global Health Leadership; **Na An, DrPH Candidate, MS, MD, MPH**, Harvard T. H. Chan; and **Vivian K. Lin, DrPH, MPH**, The University of Hong Kong

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## Introduction

In our increasingly interconnected world, migration has become a defining feature of global demographics, forced or voluntarily. Across the globe, migrants face numerous challenges accessing essential and appropriate healthcare, ranging from legal obstacles to discrimination within healthcare systems. Structural violence manifested through policies and practices leads to systematic disadvantage and further marginalizes migrants, denying them the fundamental right to health. This exclusion is particularly pronounced among people under forced migration and migrants with poor socioeconomic status, who often endure compromised living conditions and livelihood. Addressing the intersecting challenges of migration and healthcare service accessibility demands a holistic approach that calls for both feasible solutions and policy supporting the implementation of solutions. This commentary aims to raise the discussion on using digital health technologies as a possible solution for improving accessibility to essential healthcare services or mitigating the health consequences in migrants when conventional service approaches are unavailable.

## Migration Experience Affects Health

Approximately 130.8 million people are under forced displacement from manmade disasters such as armed conflicts, violence, and social movements, in addition to natural disasters such as floods, wildfires, and tropical cyclones; 70% of the displaced people are in low and low-middle-income countries, where the health systems are already facing the challenge of providing accessible, equitable and affordable services with quality healthcare (United Nations High Commissioner for Refugees, 2024). Besides forced displacement, millions voluntarily migrate for different purposes, including education, job opportunities, or to reunite with family abroad. Since each case presents different reasons for migration, migration patterns and stages, and varying health system capacities and

accessibility, there isn't a one-size-fits-all solution to ensure migrant health in all contexts.

Migrating could improve health when the destination offers better income, affordable healthcare services, better access to such services, and less health stress. This is not the case for people forced to migrate or with socioeconomic troubles that hinder them from essential and appropriate healthcare.

If not urgently life-threatening, health-seeking can be given lower priority over other needs, including food and water, personal safety, and life commodities. Still, compounded shortages in multiple life needs and health service supply are common in low and low-middle income countries and among migrants who are socially and economically marginalized in a developed economy.

Migrating affects healthcare service accessibility, continuity, quality, and equity through the diverse and complex needs of migrants generated depending on geographic conditions, pre-existing health issues, exposure to new health risks through migration and settlement, food security, mental health, livelihood, and other non-health factors bring up health vulnerabilities, including but not limited to gender, age, ethnicity, and religion. It is crucial to identify the essential health needs of various types of migrants, especially those under structural violence, which may change while adding on the capacity and accessibility of the host country's health systems and social norms, which makes a complex system of generating health needs with multiple actors, where policies and legality are essential to support this population.

Pre-existing health conditions, including pregnancy, disability, carriers of infectious diseases (e.g. HIV/AIDS, tuberculosis, hepatitis), and non-communicable chronic diseases (e.g. diabetes, hypertension, cancer), can be worsened through the migration process. This is not only caused by constraints on accessing health care services but also by neglect by the migrants and from health providers because chronic diseases are not always noticeable as

infectious diseases and hence is not being prioritized to resources allocation. Unprecedented emergencies like infectious disease outbreaks, natural disasters, or breaking out of armed conflict can quickly remove health resources from 'invisible' conditions because the need to treat acute conditions escalates, the logistic constraints on medical supplies tighten, and the existing ignorance is reinforced.

Exposure to new health risks is inevitable if the journey is long in distance or time, or is not well-prepared, particularly for people fleeing emergencies. Compromised health can be introduced and worsened by exposure to poor living conditions, limited access to safe water and sanitation, and changes in vector ecology in overcrowded refugee camps or informal settlements. Lack of preparedness is not only for living needs but also unpreparedness for information and skills in engagement with the host community's healthcare system, including language skills to communicate with health service providers.

The geographic condition affects the general environment of health and disease. It determines various environmental factors to health, including climate patterns causing natural disasters and related migration patterns (i.e. linear or circular migration pattern, chronic deteriorating condition or single time emergency), and environmental pollutants. It also determines people's transportation connectivity with health providers and the challenges to establish and maintain a primary health service infrastructure and medical supplies for a fully functional health systems in such setting.

Food insecurity, whether as the cause or the consequence of migration, aggravates existing health conditions. 780 million people are under chronic hunger, which is not only caused by compromised food production as a historical issue but also by food price inflation, interrupted production, and the broken global food distribution system under security, climate, and economic shocks. Hunger in migrants not only happens among migrants in low- and low-middle-income countries known for food production shortages but also happens to migrants to high-income countries, who may rely on various food aid programs (Ahmed, Benavente, and Diaz, 2023).

Mental health issues can be the primary consequence of insecurity, violence and abuse that led to migration (Mesa-Vieira et al., 2022). Also, migrants bear a high risk of developing mental health issues through an unstable migrating life that causes depression, anxiety, and post-traumatic stress disorder (World Health Organization, 2023). Exposure to gender-based violence is a rising health and rights issue, which is common in refugee camps or relocation sites for sheltering people under extreme disasters (Daalen et al., 2022). Victims are usually unable to deal with the physical and mental trauma, and it is

hard to initiate the legal process against the perpetrator alone, which can lead to long-term mental and physical health issues. Lacking awareness, access, acceptance, and priority of mental health and services can make mental health an invisible scar among migrants (World Health Organization, 2023).

Humanitarian aids and psychological-social supports can be highly leaning toward some groups than others, and hence inequity in aid distribution and supportive interventions builds different treatments for various migrant groups. 'Climate refugees' describes people compelled to relocate domestically or overseas due to the deteriorating conditions in their homeland caused by the gradual environmental changes associated with the climate crises. They lack a legal identity that legitimizes them to access support like other refugees because the classical legal framework does not recognize people seeking refuge for climate reasons as "refugees" (Ida, 2021). In addition, social vulnerability intertwines with the abovementioned factors. One example is less support that "non-white" people fleeing Ukraine can access from neighboring countries, compared with the Ukrainian "white" nationals, which led to difficulties for "non-whites" to resettle and hence suffering from preventable mental distress with equitable support offered to people with all races and ethnicities (Cénat et al., 2022).

With these complex situations that migrants can experience, current health systems are under challenges to bring essential health services closer to the people, cover as many migrants as needed, and achieve the best health outcome cost-effectively.

### Digital Health as a Solution for Migrant Health Issues

Digital health, from electronic health records to artificial intelligence, is the application of modern information and communication technologies (ICTs). Digital health rooted from telehealth, and further evolved by the introduction of telecommunication technology, information and communication technologies, and portable devices to healthcare practice (Abernethy et al., 2022). With mobile, portable, and wearable devices, clinics can be in a van, a train, or a ship. With the internet, doctors are not necessarily meeting with the patient face-to-face for consultation, measurements, and treatments, because the technologies allow communication through video calls, and patients can do self-helping measurements or monitoring with applications on a smartphone.

The advancement of digital health now includes artificial intelligence (AI), which offers clinical and public health practitioners automated tools for decision-making,

caregiving, and administrative management. These can reduce burnout and free up doctors and nurses to spend more time with patients. A few years ago, AI demonstrated that it could support human doctors in repetitive tasks on information analysis, such as medical imaging (Oren, Gersh and Bhatt, 2020). One day, AI can facilitate health professionals with administrative tasks like appointment scheduling, patient registration, and billing. With generative AI like ChatGPT, we can anticipate a future in which professional information on diseases, treatment, and care can be collected, processed, and given out in a style that is friendly to laypersons in almost any language. For public health, AI may one day play a disease risk forecast role in the risk factor and health service preparedness (Olawade et al., 2023).

There is an unrealized opportunity for investments in digital health to address migrants' health needs. Migrants may have limited knowledge of the health benefits and risks of digital health technologies. The current challenges include the variations in digital infrastructure, data collection and analysis capacity, health workers' and patients' digital literacy, and policy support for scalable digital health implementations for the migration population. Small-scale projects at the proof-of-concept phase showed some health-improving results, but they are siloed with low data interoperability and unknown scalability (Labrique et al., 2018). To break the silos, WHO, ISO, and individual national-level agencies (such as the U.S. Office of the National Coordinator for Health IT) have given standards for classification, database construction, and health information exchange. WHO offers assessment tools and consultation services that help nations understand the gap between the aim and the current state of digital health maturity and then provide advice on appropriate technologies for a development roadmap (i.e., the WHO Digital Clearinghouse initiative). In such a top-down approach aiming for development in both infrastructure and technology implementation, state leaders' endorsement is crucial because it brings in technical experts, funding, and supportive policy. One example is the *Digital REACH Initiative* of seven East African countries that have agreed on building a governance structure to coordinate a regional roadmap for digital health to deliver quality health services and public health regulation to migrants and border communities (East African Health Research Commission, 2017). Considering the diverse nature of migration situations and the health requirements of migrants, it's crucial to think innovatively. One practical approach could involve migrants themselves leading initiatives from the bottom up, which could offer cost-effective solutions using existing digital resources. Moreover, progress in these grassroots efforts

can be achieved by fostering collaborative partnerships among governments, academics, NGOs, private sectors, and civil society groups. Today, several innovators are looking to help vulnerable populations using digitalized health tools and systems. Electronic health records, mobile medical devices, and SMS for patient communication have already been used for clinic practices and public health campaigns targeting migrants (Radu et al., 2023). Besides the tools designed by professional technology firms, some of the existing digital devices and tools can be adjusted to fit the health needs of migrants. Humanitarian organizations have already recognized the value of messaging apps and digital mediators in supporting migrants and refugees (International Committee of the Red Cross and The Engine Room and Block Party, 2017). Mental health is a particular area for piloting digital solutions such as health information dissemination and online counselling and interventions, which were delivered online through social media and conferencing applications (e.g., Telegram, WhatsApp, Facebook, WeChat, Twitter, and Zoom) (International Committee of the Red Cross, The Engine Room, and Block Party, 2017; Linda Raftree, 2023). Nowadays, 95% of the global population lives within the footprint of a mobile broadband network, and 54% have access to smartphones (GSMA, 2023), leaving a great potential for delivering public health interventions through mobile phone networks.

### Future Perspectives

An equitable continuum of essential healthcare prevents the worst health scenarios in migrants throughout a migrating-resettlement journey with multiple health risk exposures. Digitalized health gives hope to provide cost-effective, mobile health services that help to overcome the structural barriers to maintain the highest possible health level in migrants. In addition to the recognition on migrant health rights, elevating the national digital infrastructure level and providing a supportive policy to digital health solutions, achieving accessible, equitable, and quality digital health services for migrants also needs the following changes:

- To reinforce production and synthesis of evidence through research: identify enablers and barriers to accessing health care, introduce digital health technologies, and support scaling up existing digital health technologies to fill the gaps in healthcare service provision. Develop methodologies and standards based on evidence and analyses to comprehensively understand the health scenarios of migration experience, besides clinical assessments, taking ethical, social-economical, and cultural metrics into research.
- To foster collaborations across national and

local multi-stakeholders: form a joint force of the host government, technology businesses, non-governmental sector (i.e. NGOs, philanthropies, and civil groups), and academics on set financing and policy priorities on the health and wellbeing of migrants as social integration.

- To empower migrants: create mechanisms for voicing migrants' opinions on digital health technology and governance; encourage and enable migrants to participate in technology innovation and implementation, policymaking, and implementation of digitalized health services; and provide technology-related training and free and accessible devices which the migrant could have improved access to learn how to navigate the new technologies and do bottom-up, localized technology innovations.

## Conclusion

Amidst escalating armed conflicts, frequent natural disasters, and the fallout of interconnected human and environmental crises, health systems in countries where migrants originate, transit through, and settle need to be prepared to deliver essential and appropriate healthcare services to migrants. The advancement of digital health technologies offers an opportunity to overcome limitations in manpower and financing. While digital health solutions can originate from both top-down and bottom-up approaches, the endorsement of various stakeholders, including migrants themselves, is crucial—from the initial stages of technology invention to the subsequent scaling-up and creation of value in public health.

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## Author Information

**Lei Hou, PhD, MPH**, is NAM-HKU Fellow in Global Health Leadership. **Na An, MS, MD, MPH**, is a DrPH candidate at T. H. Chan School of Public Health, Harvard University. **Vivian K. Lin, DrPH, MPH**, is Executive Associate Dean, Professor of Practice, LKS Faculty of Medicine, The University of Hong Kong.

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## Correspondence

Questions or comments should be directed to Lei Hou at [leihou.holly@gmail.com](mailto:leihou.holly@gmail.com).

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