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Viewpoint

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<https://doi.org/10.3390/challe14040045>

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Global Disparities in COVID-19 Vaccine Distribution: A Call for More Integrated Approaches to Address Inequities in Emerging Health Challenges

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Abstract: The advent of the COVID-19 vaccine signified a historic milestone in the field of vaccinology, showcasing remarkable scientific collaboration and global solidarity. However, the most prominent hurdle in maximizing the global public health impact of vaccines remains the absence of comprehensive and inclusive health systems in both high- and low-resource settings. Our discussion centers around the major contributing factors that played a key role in formulating the rapid and efficacious COVID-19 vaccines. Simultaneously, we illuminate the disparities that have marred the vaccine delivery process throughout the pandemic. In particular, we highlight the case scenarios of two minority and vulnerable communities from the Global South and North—the undocumented migrants in Thailand and the Roma community in Europe—who continue to experience inequitable vaccine access regardless of their location. We note that a crucial programmatic solution that is rooted in inclusive and equitable global public health policy, characterized by empathy and trust and bolstered by digital innovation, is lacking. These examples underscore the significance of establishing a comprehensive and integrated health system at multiple levels across countries and the entire world. Furthermore, we highlight the need for both local and global actors to collaboratively engage in vaccine distribution efforts. By gaining a concise grasp of these intricacies, the global community will be better poised to effectively combat future pandemics and emerging health challenges.

Keywords: migration; health disparities; indigenous community; political and commercial determinants of health; displacement and conflict; COVID-19 vaccine; undocumented migrants; Thailand; Myanmar; Roma; vaccine diplomacy



Citation: Asaduzzaman, M.; Khai, T.S.; de Claro, V.; Zaman, F. Global Disparities in COVID-19 Vaccine Distribution: A Call for More Integrated Approaches to Address Inequities in Emerging Health Challenges. *Challenges* **2023**, *14*, 45. <https://doi.org/10.3390/challe14040045>

Academic Editor: Susan Prescott

Received: 22 August 2023

Revised: 27 October 2023

Accepted: 29 October 2023

Published: 31 October 2023



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1. Introduction

One of the main driving forces behind the funding for the rapid development of Coronavirus disease 2019 (COVID-19) vaccines was undoubtedly the disease's pervasiveness in both low-income and high-income nations. This dynamic set it apart from past outbreaks caused by various tropical diseases such as Nipah, Chikungunya, etc. which had to contend with significant funding crises or scientific efforts in containment [1,2]. The geographical location, disruption in trade, and travel, and affected population have always been important factors in global efforts for disease prevention and control [3]. The current COVID-19 pandemic reflects a similar trajectory. An estimated 60% of the world's manufacturing demand is satisfied by the USA, China, Korea, Italy, Japan, and Germany, which also accounts for around 50% of global exports and 55% of the supply chain [4]. The substantial economic burden of COVID-19 in these nations had a profound impact on international trade, business, and travel, and both larger and smaller economies were

severely affected [5]. Alongside the public health implications, the rapid development of vaccines emerged as the most effective and efficient approach to tackle this widespread obstruction to global commerce [6]. However, it takes 10.71 years on average to develop a vaccine, starting from the understanding of the causative agents or target component (e.g., 50 spike protein) [7]. While the regulatory process usually takes a considerable time, it was comparatively simpler for COVID-19 vaccines. The European Medicines Agency (EMA) was willing to grant approval to vaccines with efficacy levels below 50% [8] and the US Food and Drug Administration (FDA) issued emergency use authorization (EUA) for COVID-19 vaccines with similar efficacy [9]. In fact, both the EMA and FDA issued an EUA in December 2020 [10]. Collaborative data sharing among scientific communities played a pivotal role as well. An example is the adenovirus-vectored MERS vaccine ChAdOx1 (which also targets the spike protein of viruses within the same family) which demonstrated previous scientific progress in a fantastic way [11].

The funding process, which usually is a major challenge, was also easier in the case of COVID-19 vaccines. The US 'Operation Warp Speed (OWS)' initiative alone invested \$18 billion, and the Coalition for Epidemic Preparedness Innovations (CEPI) and the European Commission invested \$1.4 billion and \$8 billion, respectively, for COVID-19 vaccine development [12,13]. With few exceptions, political leaders in both developing and developed countries treated this situation seriously and contributed to the global partnership. For instance, regulations were adopted in many countries to expedite the approval of vaccine products and enforce lockdown and personal protective measures [14,15]. Furthermore, mass awareness, media campaigning, and concurrent mixed trials in various study sites contributed to the release of several COVID-19 vaccines (e.g., AstraZeneca, Pfizer-BioNTech, Sinopharm, Moderna, Johnson & Johnson, etc.) into the market in 2021, a mere year after the pandemic declaration by the World Health Organization (WHO) [16]. These collective endeavors and initiatives will undoubtedly be remembered as a global solidarity milestone and a historical miracle in the field of vaccine development. However, did this success story extend to the distribution process? Was the global community attentive to the needs of vulnerable populations? Did these populations receive the vaccines they most urgently required?

2. Global Public Policy versus Vaccine Diplomacy

COVID-19 forged a connection between politics and public health in a manner that has never been seen before. However, this alliance faltered during the vaccine distribution phase. Political decision is one of the key factors affecting the equitable resource allocation and distribution of healthcare tools, including vaccines. The foremost obstacle to equitable COVID-19 vaccine distribution is vaccine nationalism, where affluent nations secure priority access to vaccines using legal contracts (advance purchase agreements) with vaccine companies [17]. Despite accounting for only 13% of the global population, high-income countries booked almost 51% of the available vaccine doses [18]. This disregard for the needs of lower-income countries with higher populations and disease burden is deeply concerning. We believe that vaccines should be considered a 'global public good'. Unfortunately, the World Health Assembly (WHA) which convened in May 2020 failed to stand for the 'Health for All' mandate of the WHO in this context [19]. Providentially, this caused vaccine diplomacy to garner more attention than at any other time since its inception. Vaccine diplomacy encompasses any form of global health diplomacy that centers on the administration or utilization of vaccines, particularly as a means of humanitarian intervention [20]. In this new era of vaccine diplomacy, a global vaccination strategy has emerged to facilitate more equitable vaccine distribution to some extent. This global partnership called "The COVID-19 Vaccines Global Access (COVAX) Facility", formulated by the WHO, CEPI, and Global Alliance for Vaccines and Immunization (GAVI), stands as one of the most effective approaches to ensure vaccine availability for at least 20% of the population in 92 countries irrespective of their economic situation [21]. Still, the success of this great initiative depends on the global leadership and policymakers which can be

jeopardized if a concrete policy binding is not in place. Nevertheless, poor people in many countries continue to face challenges related to the trust in political leadership and scientific resources upon which successful vaccine delivery and optimum coverage largely depend [22]. This underscores the intricate interplay between global and local health policies on vaccine diplomacy.

3. Tale of Minorities in the Pandemic

The COVID-19 pandemic brought attention to the inequalities and disparities that affect the most vulnerable people across all countries, particularly refugees and irregular/undocumented migrants [23]. The international migrant population reached up to 281 million in 2020, representing 3.6% of the world's population [24]. Refugees and migrants face a higher susceptibility to COVID-19 than the host population due to their living conditions, often characterized by overcrowding, poor sanitation, and inadequate resources to maintain physical distance [25]. Despite scientific evidence illustrating the unequal sufferings of COVID-19 among displaced, minority ethnic, and specific racial communities, these populations were not given priority in the global vaccine discourse [26]. As of March 2022 data, the International Organization for Migration (IOM) reported that only 53% of countries ($n = 95$ out of 180) where irregular/undocumented migrants operate have access to COVID-19 vaccines, and only 47% of countries ($n = 85$ out of 180) in the case of internally displaced people (IDPs) [27]. Even though 85% of refugees live in developing countries, they are most often undermined by the vaccination policy [28]. A major legal constraint is that the 1951 Refugee Convention has not been signed by many countries hosting large numbers of refugees and undocumented migrants such as India, Bangladesh, Pakistan, Sri Lanka, Thailand, Malaysia, and Indonesia [29]. Though there are instances where non-signatory countries have provided vaccines to refugees, the Refugee Convention continues to hold a significant role in vaccination efforts. Member countries are obligated to provide vaccinations and can be influenced to do so through UN agencies. However, for the non-signatory countries mentioned above, migrant workers' access to vaccination depends on mercy, resource availability, and the national interest of the host country. In addition, the intervention capacity of UN agencies is also limited in such cases.

The living conditions of migrants often pose a greater risk of infectious diseases due to factors such as overcrowding, poor living conditions, and limited access to health care. All states are required to protect the right to health and non-discrimination for all individuals, including migrants. The provision of vaccines to migrants regardless of their nationality, immigration status, or other prohibited grounds of discrimination is an essential component of meeting these obligations [30]. Undocumented migrants frequently face a higher risk of infection because they work in essential or frontline occupations without proper protective gear. They are frequently excluded from the social safety measures provided to the general population by governments during consecutive lockdowns. Consequently, they can potentially serve as carriers of infectious diseases, contributing to their transmission to a broader population [31]. Providing vaccines to migrants can help prevent the spread of diseases to the wider community and protect public health [32], helping to promote health equity and ensuring that all members of society have access to essential healthcare services [33]. Therefore, in this paper, we presented the undocumented migrant workers in Thailand as a case scenario due to their vulnerability and the discrimination they faced within the local health system which resulted from broader global health policies and diplomatic initiatives.

4. Undocumented Migrants in Thailand: Unprivileged Community without Care in the Global South

According to the 2019 migration report, Thailand is a regional hub in Southeast Asia with 3.9 million migrant workers (of which one-third are undocumented) from its neighboring countries of Myanmar, Cambodia, Laos, and Vietnam [34]. Regrettably, undocumented migrants are excluded from coverage under the Thai Social Security Schemes (SSS) and any

other forms of health insurance [35]. Consequently, they face difficulties in accessing health-care services [36]. This situation disproportionately affects migrant children and workers with chronic illnesses [37]. The challenges they face have been significantly compounded by the impact of the COVID-19 pandemic [38]. For example, undocumented Myanmar migrant workers experience public discrimination, lack of medical care, and fear of arrest or detention, leading to notable mental health repercussions [39].

In the case of the Thai Labor Ministry's decision to vaccinate only those migrant workers covered by the SSS, an estimated 1.3 million undocumented migrant workers without SSS coverage were left without receiving any vaccine dose [40]. Furthermore, the lack of a traceable database of undocumented migrant workers in Thailand also implies the absence of vaccination information for this vulnerable group [41]. However, the health authority can potentially reach the undocumented migrant workers in collaboration with civil society organizations, community-based organizations, various labor organizations, and volunteer groups which could facilitate the dissemination of vital emergency information, including pandemic preparedness and vaccination guidance [42]. Interestingly, the solution adopted by the Thai government involved offering a period of regularization (based on cabinet resolution and employers' endorsement) to irregular/undocumented migrant workers [43]. Those who successfully completed the registration process were permitted to work until 2023. Yet, the cost associated with the health examination was approximately 7200 baths (240 USD), which excluded transportation, registration fees, and broker service charges for the facilitation of registration [44] and was not practical or affordable for individuals who have lost their employment and livelihood during the pandemic. Unfortunately, Thai authorities continued to detain undocumented workers and either deported or confined them in camps [45]. These legal actions further deter migrants from seeking treatment and COVID-19 vaccination. Obviously, the undocumented migrants would be afraid to disclose their illness and their motivation for vaccination. Additionally, there is public prejudice and stigma against migrant workers, as they are often portrayed as virus spreaders, leading to their exclusion from healthcare services [46]. Amidst community lockdowns, social stigma, unemployment, legal interventions, the lack of digital information available in migrants' language, and limited awareness programs, a significant portion of this population group lives in fear and exhibits limited interest in being vaccinated [47]. All these factors reinforce the importance of robust global public policies that ensure equitable access to healthcare services at the local level.

5. Roma People in Europe: Low Profile in High-Income Settings

The Roma people are one of the most underprivileged ethnic groups in Europe, with an estimated 12 million population, residing predominantly in slums and informal settlements [48]. Similar to the undocumented migrants in Thailand, the Roma people are socially and politically stigmatized, often unfairly scapegoated as sources of infection, and were placed under strict quarantine (referred to as 'negative quarantine') during the challenging circumstances of the pandemic [49,50]. However, a Hungarian study revealed that the COVID-19 incidence rates in districts with a high Roma population were much lower compared to the national average, while areas with a lower Roma population had higher rates [51]. Unfortunately, among the younger age groups, the COVID-19 mortality in the Roma population surpassed that of the general population, highlighting their poor health condition and the enduring impact of discrimination [48]. The current pandemic has aggravated the existing social exclusion and inequality faced by the Roma community, including disparities in employment, education, and access to healthcare. Despite living in a technologically advanced continent, this population group has low health literacy and technical know-how, rendering them marginalized from digital or e-health COVID-19 services, including vaccination, social support, and awareness messages [52]. In addition, inadequate communication and discernment from health staff, the absence of culturally oriented services, language barriers, high mobility necessary for livelihood, co-payment requirements, and referral-based health systems collectively jeopardize the health,

well-being, and effective vaccination efforts of the Roma community [53]. Consequently, vaccine coverage was found to be significantly lower among the group, as indicated by a national survey in Hungary [54]. Although historical vaccine hesitancy or low coverage is well documented in this population [55], specific and effective measures have yet to be implemented. Furthermore, in Europe, there are no ethnic data (including that of the Roma population) maintained on COVID-19 vaccine coverage [48]. This evident gap eventually results in fragmented and incongruent national and global health policies that overlook minority groups in the population. The establishment of a population-based digital data repository (e.g., vaccine registry) that includes the vulnerable population at both local and global levels could assist policymakers in making timely, effective, and more inclusive decisions.

6. Discussion

Despite substantial global efforts, financial mobilization, and the successful development of effective COVID-19 vaccines, the fair distribution of vaccines remains a significant obstacle to achieving healthcare access for all. Within this context, we have identified several pivotal factors pertinent to our specific case population. In this discourse, our major observations encompass vaccination hesitancy, vaccine diplomacy, inequitable vaccine delivery, budget allocation, health system management, the absence of digital infrastructure, insufficiently trained health professionals, and more. The successful implementation of health interventions, such as vaccination, usually relies on globally coordinated public health policies informed by locally derived research outcomes.

It is a fundamental principle that, in the 21st century, no one should be required to present identity proof to access basic life-saving measures like vaccines. Undocumented migrants already face a range of obstacles in accessing COVID-19 vaccination, including the lack of access to information in a language they understand, costs, and legal, administrative, and practical barriers [30]. The fear of detention and expulsion, lack of trust in authorities, confusion about regulations, entitlements, and protections, as well as exposure to an immigration enforcement system, may undermine public health efforts to prevent the further transmission of COVID-19 by reducing the acceptability of vaccination [31,56]. Given that minority and vulnerable population groups consistently experience higher levels of inequality and are often overlooked, a viable approach is the establishment of effective global and local policies and partnerships that regard them as major stakeholders within pandemic preparedness plans [57].

Nonetheless, the COVID-19 pandemic has highlighted 'vaccine diplomacy' as an added modifier in the global policy adaptation and accentuated the exclusion of the 'marginalized population' from local vaccine delivery efforts more prominently than ever. This phenomenon is substantially influenced by the political dominance of the Global North, which is often rooted in wealth indices, in contrast to the resource-constrained health systems prevalent in the Global South. Vaccine diplomacy and global policy adaptation can result in the migrants in some countries being excluded from receiving vaccines. Vaccine diplomacy can also be influenced by geopolitical considerations, such as national interests, alliances, and power dynamics [58]. For example, the Chinese government has been providing vaccines to countries in the region and using them to strengthen its diplomatic ties, while the United States has been donating vaccines and using them to establish US leadership in the field of global health [59]. This can contribute to health disparities and inequalities among migrant populations and undermine efforts to promote global health equity.

The lessons gleaned from this experience should be integral in shaping future pandemic preparedness policies, particularly the notion of vaccine diplomacy. We argue that vaccine diplomacy should be reframed through a decolonized and non-capitalist lens by promoting universal access to vaccines, opposing neocolonial methods, addressing conflicting political ideologies and methods, investigating novel approaches, and challenging vaccine imperialism. The lopsided distribution of vaccines still results in unequal access

to healthcare for migrants, including undocumented immigrants in Thailand. From our standpoint, along with the examples highlighted involving undocumented migrants in Thailand and the mobile Roma community in Europe, an empathetic, trust-based, and inclusive health policy supported by digital innovations for the comprehensive tracking of vaccination and other health interventions, alongside the promotion of widespread awareness (digital literacy), emerges as a paramount programmatic solution. In addition, the role of an immunization information system (IIS) or vaccine registry proves essential, yet it is lacking in our specific case scenarios, underscoring the necessity for its functionality across all settings. To cater to minority and hard-to-reach populations, the provision of multilingual information systems and mobile vaccination teams is crucial to ensure their inclusion in vaccine coverage. The evident consequences of unequal vaccine distribution at local levels not only facilitate the spread of the disease but also enable new variants to emerge [60], increasing the burden on healthcare systems [61] and economic and social impacts [62].

7. Conclusions

We emphasize the importance of directing attention towards specialized research and enhancing health system accessibility for minority populations, including diverse migrants, vulnerable groups, mobile communities, and indigenous peoples, irrespective of their socioeconomic background, health literacy, or legal standing. In addition to the comprehensive global policy initiatives advocated by world leaders, policymakers, and UN agencies, we strongly argue for the establishment of an impartial and just vaccination policy in every nation. This policy is crucial to uphold the principle of ‘leaving no one behind’ and ensure that it is free of any influence stemming from racial, cultural, economic, or social dynamics.

Author Contributions: Conceptualization, M.A. and T.S.K.; methodology, M.A. and T.S.K.; validation, M.A. and T.S.K.; formal analysis, M.A.; investigation, M.A. and T.S.K.; resources, M.A.; data curation, M.A., T.S.K., F.Z. and V.d.C.; writing—original draft preparation, M.A.; writing—review and editing, T.S.K., V.d.C. and F.Z.; supervision, M.A.; project administration, M.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: Not applicable.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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