https://dergipark.org.tr/tr/pub/ijhmt Doi Number: 10.31201/ijhmt.1122825

Int Journal Of Health Manag. And Tourism 2022, 7(2),231-244

IJHMT Editorial

International Journal Of Health Management And Tourism

REFLECTIONS OF HEALTH INEQUALITIES ON THE COVID-19 VACCINATION PROCESS AND THE VIEWS OF HEALTHCARE PROFESSIONALS

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Received:21.06.2022
Accepted: 25.07.2022
Research Article

Abstract

Aim: Social and economic conditions are the main reasons for the emergence of inequalities. During the COVID-19 pandemic, inequalities were seen to increase further. This study was conducted to evaluate the reflections of health inequalities on the COVID-19 vaccination process and the views and recommendations of health care professionals in this regard.

Methods: This descriptive research was conducted in eastern Turkey with 344 health care professionals. The research data were collected using a questionnaire and analyzed by using numbers, mean and percentages.

Results: Of the health care professionals, 95.9% reported inequality between countries during the COVID-19 vaccination process, 97.1% reported that access to vaccines was a human right, and 96.1% reported that everyone should have access to vaccines without discrimination. According to health care professionals, not releasing the vaccines into the public domain (86.3%), the income of countries (84.3%), and failure to

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determine vaccination priorities according to public health rules (77.9%) were among the reasons for inequality between countries in COVID-19 vaccination.
Conclusion: Health care professionals reported that there were inequalities between countries in the COVID-19 vaccination process. Almost all of them are of the opinion that access to vaccines is a human right and that everyone should have access to vaccines without discrimination.
Keywords: COVID-19, COVID-19 vaccination, inequality in health.

INTRODUCTION

The COVID-19 outbreak was reported in December 2019, with the first case emerging in Wuhan, China. The World Health Organization (WHO) declared COVID-19 an international public health emergency on January 30, 2020, and a pandemic on March 11, 2020. It has been reported that the coronavirus spread very rapidly to low, middle and high-income countries, making the failures of the health systems of the countries visible, and increasing inequalities with different dimensions by disproportionately affecting the social, economic and political structures of the countries (Ekpenyong & Pacheco, 2020; Siu, 2021). Health inequality refers to preventable situations that develop due to social and economic conditions or inadequate health systems and negatively affect human health. Health inequalities are investigated according to race/ethnicity, gender, education, income status, occupation, and social dimensions (Arcaya et al., 2015; Barreto, 2017). Inequalities negatively affect all countries and increase the burden of disease by making it difficult to prevent and manage infectious diseases, especially in developing countries (Siu, 2021). It has been emphasized that COVID-19 is a major health crisis for all countries since World War II. In line with the pandemic, inequalities between countries continue to increase (Ahmed et al., 2020; Keys et al., 2021). It has been reported that there is a need for fair distribution of resources and urgent internationally coordinated action to prevent increased COVID-19-related inequality worldwide and to reduce its negative impact seen in low-income countries(United Nations Human Right Office of the High Commissioner, 2020).

Vaccines produced to prevent and control the pandemic continue to be a hope for people. As soon as their production, however, most of the vaccines were purchased by rich countries, which led to a debate about vaccine inequality and vaccine nationalism. It is stated that the priorities in vaccination are not determined according to public health principles and that the income of countries is effective in the distribution of vaccines. Following the vaccine production,

it was stated that high-income countries purchased 53% of COVID-19 vaccines in the first three months of 2021, and vaccinated 25% of their own population, compared to less than 1% of vaccination in low-income countries (Eslava-Schmalbach et al., 2021; Forman & Kohler, 2020; Su et al., 2021). It has been stated that income inequality, vaccine production, vaccine distribution, patents, failure to manage vaccine priorities well, unfair attitudes, and ideological and nationalist approaches to vaccination were effective in the formation of inequalities related to COVID-19 vaccines seen in countries (Arcaya et al., 2015; Bolcato et al., 2021; Perry et al., 2021; Su et al., 2021). On the other hand, it has been emphasized that factors such as the social-economic structure of the countries, ethnic, religious, and minority groups, access to the country's health system and health services, poverty, and health labor force cause inequalities in vaccination (Njoku et al., 2021; Okoi & Bwawa, 2020; Sina-Odunsi, 2021). Therefore, during the COVID-19 epidemic, the inequalities that became more evident within countries and in the countries, has led to the emergence of different inequalities in health by the vaccination of COVID-19. It has been reported that during the COVID-19 vaccine production phase and afterwards, some countries with high incomes first purchased most of the vaccines produced with the understanding of my nation. It has been reported that this situation will have negative effects on the global health system, as it will increase the inequality in countries due to the inequality experienced in the COVID-19 vaccination, as well as cause discussions on vaccine nationalism in the world. This situation has negatively affected vaccination priorities and access to COVID-19 vaccines in the world, leading to an increase in inequalities between countries. On the other hand, it has been observed that inequalities in COVID-19 vaccination in some countries have become more pronounced in disadvantaged groups in vaccination. For example, in England and the United States, ethnic inequalities were seen in COVID-19 vaccination and vaccination rates in other religious and black groups were lower than in whites (Bolcato et al., 2021; Watkinson et al., 2022).

In the fight against COVID-19, it has been emphasized that public health principles and human rights are important in reducing inequality. The UN Human Rights Office stated that access to COVID-19 vaccines is a human right without economic discrimination and announced to all countries that vaccines should be considered globally public domain and that vaccine distribution should be determined according to public health priorities and that everyone should have access to vaccines without discrimination (United Nations Human Right Office of the High Commissioner, 2020). However, public health and human rights approaches have not been

effective in determining vaccination priorities between countries during the vaccination. Inequalities in access and distribution of vaccines between countries in COVID-19 vaccination continue to increase. It has been reported that there are significant disparities in access to the vaccine between countries in COVID-19 vaccination, and between groups vaccinated in some countries. This study was conducted to evaluate the reflections of health inequalities in the COVID-19 vaccination process and the opinions and recommendations of health care professionals.

The research sought answers to the following questions.

- According to health workers, is there inequality between countries in the COVID-19 vaccination process?
- What are the causes of inequality between countries in the COVID-19 vaccination process, according to healthcare professionals?
- What are the recommendations of healthcare professionals on preventing the COVID-19 vaccination inequality?

2. RESEARCH METHODOLOGY

This study has a descriptive research design. The research was carried out between 22 November-2021 and 14 January 2022 in two provinces located in eastern Turkey. The study population consisted of all health personnel working in public health institutions in Tunceli and Muş provinces. The study samples consisted of a total of 344 health care professionals (physicians, nurses, midwives, health officers, health technicians) who volunteered to participate in the research between the dates of the study.

The research data were collected using a questionnaire developed by the researcher in line with the literature (Forman & Kohler, 2020; Keys et al., 2021; Su et al., 2021; United Nations Human Right Office of the High Commissioner, 2020). A pilot study was conducted on ten healthcare workers who were not included in the study before the study data were collected. Two questions that were not clearly understood were changed and the questionnaire was given its final form. The first part of the two-part questionnaire consisted of six items about the socio-demographic characteristics of health care professionals, while the second part consisted of seven items about the views of health care professionals on health inequalities during the COVID-19 vaccination. Research data were collected online using google forms. The survey link prepared

with Google Forms was submitted by the researcher to the health care professionals with the help of health institution managers in order to collect research data online. The obtained research data were analyzed by using number, mean and percentage in the computer aided program.

Before starting the study, ethical approval (No: E.15447) was obtained from the Munzur University of Non-Interventional Research Ethics Committee with decision No:15/7, 23 June 2021-16014.

3. FINDINGS

The mean age of the health care professionals was 34.3±8.5 years, 62.5% was female, 48% had a Bachelor's degree, 49.1% was a nurse, 14% was general practitioner, 12.5% was a midwife, and 57.3% had an unbalanced income (Table 1).

Table 1. Introductory characteristics of the health care professionals

Characteristics	N	%
Age (X±SD)	34.3±8.5 (Min=19, Max=61)	
Gender		
Female	215	62.5
Male	129	37.5
Education status		
High school	22	6.4
Vocational school	74	21.5
Bachelor degree	165	48.0
Master degree	68	19.7
Doctorate	15	4.4
Occupation		
Nurse	169	49.1
General practitioner	48	14.0
Health technician/technician	45	13.1
Midwife	43	12.5
Health officer	27	7.8
Specialist physician	12	3.5
Perceived average income		
Low	197	57.3
Balanced	108	31.4
High	39	11.3

Of the health care professionals, 95.9% reported inequality between countries during the COVID-19 vaccination, 97.1% reported that access to vaccines is a human right, and 96.5% reported that everyone should have access to vaccines without discrimination. According to the health care

professionals, reasons for the inequality between the countries during the COVID-19 vaccination process include failure to release vaccines in the public domain (86.3%), the income of the countries (84.3%), failure to determine vaccination priorities according to public health rules (77.9%), the dominance of profit-oriented companies in the vaccine production and sales (68.3%), lack of vaccine production in some countries (61%), political structures and regimes of countries (54.6%), and failure of profit-oriented companies to act responsibly in relation to vaccine production and access (50.6%) (Table 2).

Table 2. Opinions of health care professionals about the inequalities in COVID-19 vaccination

Characteristics	N	%
The inequality between countries during the COVID-19 vaccination		
Yes	330	95.9
No	14	4.1
Believing that access to vaccines is a human right		
Yes	334	97.1
No	10	2.9
The idea that everyone should have access to vaccines without discrimination		
Yes		
No	332	96.5
	12	3.5
The reasons for the inequality between countries in the COVID-19 vaccination process *		
Vaccines produced are not considered globally public domain	297	86.3
Incomes of countries	290	84.3
Failure to determine vaccination priorities according to public health rules	268	77.9
The dominance of profit-oriented companies in the vaccine production and sales		
Lack of vaccine production in some countries	235	68.3
Political structures and regimes of countries	210	61.0
Failure of profit-oriented companies to act responsibly in relation to vaccine production and	186	54.6
access	174	50.6

* Number of multiple respondents

According to the health care professionals, inequality in COVID-19 vaccination can be prevented by increasing cooperation between countries (69.2%), delivery of vaccines to everyone without discrimination, in accordance with human rights and public health rules (66.3%), meeting the urgent needs of developing countries by the international community (64.8%), transparent sharing of data between countries (62.2%), establishing a global fund to reduce the negative impact on developing countries (59.9%), ensuring that developed countries assume the initiative in solving urgent health problems by providing financial support to international institutions (57.3%). In addition, the health care professionals reported that inequalities in the COVID-19 epidemic can be reduced by releasing vaccines into the public domain and fair delivery of vaccines globally

(47.3%), the help provided by high-income countries to developing countries (44.8%), and foundation of a global health system so that all people have access to basic health services (39.2%) (Table 3).

Table 3. Opinions and recommendations of health care professionals to prevent and reduce inequalities in COVID-19 vaccination

Recommendations on preventing inequality in COVID-19 vaccination*	**n**	**%**
Increasing cooperation between countries	238	69.2
Delivery of vaccines to everyone without discrimination, in accordance with human rights and public health rules	228	66.3
Meeting the urgent needs of developing countries by the international community	223	64.8
Transparent sharing of data between countries	214	62.2
Establishing a global fund to reduce the negative impact on developing countries	206	59.9
Ensuring that developed countries assume the initiative in solving urgent health problems by providing financial support to international institutions	197	57.3
Recommendations for reducing inequality during the COVID-19 pandemic*		
Releasing vaccines into the public domain and fair delivery of vaccines globally	167	47.3
Aid by high-income countries to developing countries	154	44.8
Foundation of a global health system so that all people have access to basic health services	135	39.2

* Number of respondents giving more than one answer

4. DISCUSSION

Gini coefficient indicates the income inequality between high- and low-income countries and shows that low-income countries and disadvantaged groups often need external support to meet their needs and in the solution of urgent health problems. From the past to the present, pandemics have caused high morbidity and mortality due to inequality in disadvantaged communities. COVID-19, which spread all over the world in 2020, continues to have devastating effects on human health through the increasing inequalities between countries (Bambra et al., 2021; Barreto, 2017; Rodríguez-Bailón, 2020). Statistically significant increases in mortality rates due to income inequality and the spread of COVID-19 have been reported among OECD countries(Wildman, 2021). According to the Office for National Statistics, when mortality rates were compared in the most deprived areas of England with those in better economic regions, it was reported that there were twice as many deaths from COVID-19 in most deprived areas (Haynes, 2020). It has been stated that there is inequality between races in access to resources such as social and economic conditions, housing, nutrition, health care, masks, and decontamination in the United States (Njoku et al., 2021) and that income distribution and race are two factors that have been effective in

increased inequality during the pandemic in South Africa (Mubangizi & Mubangizi, 2021; Nwosu & Oyenubi, 2021). In a study of Arab countries, however, it was emphasized that health systems are not adequately equipped to meet health needs (Hasan, 2021). It has been reported that status, age, education, disability, race, ethnicity, caste, tribe, religion, class, profession, and income status are the effective factors in the health inequalities (Seddighi, 2020). It has also been emphasized that public health practices and a human rights-based approach will be effective in ensuring equality and social justice in preventing and controlling the epidemic (Cheshmehzangi, 2022; Mubangizi & Mubangizi, 2021). In this study, health care professionals believe that inequality is caused by similar reasons, such as countries' income levels, and failure to determine vaccination priorities according to public health rules.

Vaccines play an important role in the control of infectious diseases. COVID-19 vaccines developed to combat the epidemic have been the most effective method in the fight against the disease so far. However, there are inequalities in the development, production, licensing, cost, availability, distribution, and prioritization of vaccines between countries (Mathieu et al., 2021; Nafilyan et al., 2021; Njoku et al., 2021; Rađenović et al., 2022). In this study, almost all health care professionals reported that there was inequality between countries in access to COVID-19 vaccines. The reasons for the inequality were also reported as vaccines are not considered to be in the global public domain, countries' income, vaccination priorities, which are not determined according to public health rules, lack of vaccine production in some countries, and domination of profit-oriented companies in the production and sale of vaccines. It has been reported that significant disparities in the production and distribution of coronavirus vaccines between countries and within the countries themselves have affected vaccination (Mathieu et al., 2021; Nafilyan et al., 2021; Rađenović et al., 2022) The fact that some countries stockpiled the COVID-19 vaccines they produced and the vaccines they purchased from other vaccine-producing countries has negatively affected the vaccination prioritization and the access of countries in need to the vaccine (Bolcato et al., 2021). Despite the commitments of the European Union countries about making the COVID-19 vaccines public domain globally, it has been stated that public health principles have been ignored in the distribution of vaccines and that the income of countries has been effective in the distribution of vaccines. For example, as of April 9th, 2021, 40% of the 726 million doses of COVID-19 vaccine administered worldwide were administered by 27 rich countries in the world, and only 1.6% of the vaccine was administered in low-income countries (Forman &

Kohler, 2020; Van De Pas et al., 2022). It has been observed that there are great differences in vaccination rates between countries after COVID-19 vaccine production. It has been reported that the most important reason for this difference is the income of the countries. It has been stated that countries such as Israel, United Arab Emirates, United Kingdom, United States of America and Bahrain, which started vaccination, are high-income countries. For example, as of April 7, 2021, the cumulative number of vaccine doses administered to 100 people was 118% in Israel, while it was reported to be less than 0.1% in countries that have just started vaccination campaigns such as Mali, Namibia and Brunei (Mathieu et al., 2021). According to the literature review, the social-economic conditions, ethnicity, and gender were the most effective factors in the vaccination of adults (Perry et al., 2021). A study conducted in the UK reported that there are large differences in COVID-19 vaccination rates between ethnic and religious groups. The first dose vaccination of elderly people over the age of seventy living in the country was compared and the vaccination rates were lower in Black Caribbean, Black African, Bangladeshi and Pakistani than white British (Nafilyan et al., 2021). In another study, when the first dose of COVID-19 vaccines administered to more than 195 million people in the United States were compared by race and ethnicity, it was seen that non-Hispanic white Americans ranked first, 60.3% of those vaccinated (Njoku et al.,2021). In Pakistan, however, it has been observed that conspiracy theories and anti-vaccine religious leadership negatively affected vaccine hesitancy, and caused inequality between groups in access to vaccines due to the lack of sufficient COVID-19 vaccines in the country (Perveen et al., 2022). In order for the fair distribution of vaccines in countries, it has been stated that transparent planning should be carried out in proportion to the health status and population of all countries, as well as the social and economic structure of all countries (Bolcato et al., 2021). COVID-19 Vaccines Global Access (COVAX) initiative aims to reduce inequalities in vaccinations of high-risk groups in high-income and low-income countries. However, due to the fact that high-income countries purchased a high amount of vaccines, low- and middle-income countries have been negatively affected regarding access to the vaccine through COVAX. In summary, it has been reported that the COVAX initiative is not carried out effectively and efficiently for reasons such as pricing, payment, patent, production, delivery, and management of vaccines(Eslava-Schmalbach et al., 2021; Su et al., 2021). Therefore, it has been stated that it will be important for potential vaccine manufacturers and patent holders and vaccine producing countries to reach an agreement under the leadership of the World Trade Organization and the

World Health Organization for global public health and for fair and effective access to vaccines (Van De Pas et al., 2022).

In this study, almost all health care professionals agreed that vaccination is a human right and all people should have access to a free vaccination. It has been stated that it is important to increase cooperation between countries, deliver vaccines to everyone in accordance with human rights and public health without discrimination, meet the urgent needs of developing countries by the international community, share data transparently between countries, establish a global fund to mitigate negative effects on the developing countries, and to ensure that developed countries assume the initiative in solving urgent health problems by providing financial support to international institutions for the elimination of inequality in access to vaccines. It has also been reported in the literature that access to vaccines is a human right and that it is necessary to ensure that COVID-19 vaccines are accessible to everyone, in accordance with the principles of public health and human rights in the distribution of vaccines and vaccination prioritization (United Nations Human Right Office of the High Commissioner, 2020). It has been stated that only one-third of the World Health Organization (WHO) member states have strong public health capacity and that the health systems of the remaining countries are insufficient and fragile (Kluge et al., 2018; Taylor et al., 2020). On the other hand, it was emphasized that countries with a strong preventive health services infrastructure have achieved significant gains in the fight against the epidemic. For example, Cuba's strong National Health System and its primary health care guarantee an effective and fair response to COVID-19 with its egalitarian principle based on universal, free health insurance (Bermejo et al., 2021). During the pandemic, it has been emphasized that countries with strong health systems are more advantageous in solving the problems experienced due to the epidemic, and it was reported that low-income countries with poor health systems, which are further negatively affected by the pandemic, need the support of the international community and institutions in solving their health problems (Ahmed et al., 2020; Spencer et al., 2020; United Nations Human Right Office of the High Commissioner, 2020). It has been stated that international cooperation and global cohesion should be strengthened in the solution to the pandemic crisis. In addition, it has been stated that international cooperation and global solidarity, strengthening the global economy, strengthening global health security, and health systems, and addressing inequalities are necessary in order to achieve the global health goals (Taghizade et al., 2021).

In this study, the health care professionals reported that inequalities in the COVID-19 epidemic can be reduced by releasing vaccines into the public domain and fair delivery of vaccines globally, help provided by high-income countries to developing countries, and foundation of a global health system so that all people have access to basic health services. It has been stated in the literature that special vaccination approaches should be developed in disadvantaged communities to reduce inequality in vaccination (Perry et al., 2021). It has been emphasized that the commitments made to strengthen the global health system have largely failed to be fulfilled. In line with the COVID-19 pandemic, the world's most vulnerable groups have experienced inequality in access to resources, and that resources were disproportionately allocated to privileged power elites, disproportionately exposing inequalities not only globally, but also regionally and locally (Shamasunder et al., 2020).

4. CONCLUSIONS AND RECOMMENDATIONS

The research results showed that almost all health care professionals believe that there is inequality between countries during the COVID-19 vaccination and that COVID-19 vaccines should be delivered to everyone without discrimination. The reasons for the inequality between countries were reported as the failure to provide vaccines in the public domain globally, the income of the countries, vaccination priorities that are not determined according to public health rules, lack of vaccine production in some countries, and domination of profit-oriented companies in the production and access of vaccines. In line with these findings, it is recommended to strengthen the international common approach to people's global health security, develop public health practices, implement policies based on human rights, and deliver vaccines fairly to everyone regardless of their income.

Conflict of Interest: The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding: This research was not supported by any institution.

References

Ahmed, F., Ahmed, N., Pissarides, C., & Stiglitz, J. (2020). Why inequality could spread COVID-19. *The Lancet Public Health*, *5*(5), e240. https://doi.org/10.1016/S2468-2667(20)30085-2

Arcaya, M. C., Arcaya, A. L., & Subramanian, S. V. (2015). Inequalities in health: Definitions, concepts, and theories. *Global Health Action*, *8*(1). https://doi.org/10.3402/gha.v8.27106

Bambra, C., Albani, V., & Franklin, P. (2021). COVID-19 and the gender health paradox. *Scandinavian Journal of Public Health*, *49*(1), 17–26. https://doi.org/10.1177/1403494820975604

Barreto, M. L. (2017). Health inequalities: A global perspective. *Ciencia e Saude Coletiva*, *22*(7), 2097–2108. https://doi.org/10.1590/1413-81232017227.02742017

Bermejo, P. M., Valdés, L. S., López, L. S., Valdivia Onega, N. C., Vidal Ledo, M. J., Sánchez, I. A., Jo, A. S., Cruz, Y. A., & Ojeda, R. M. (2021). Equity and the Cuban National Health System's response to COVID-19. *Revista Panamericana de Salud Publica/Pan American Journal of Public Health*, *45*, 1–9. https://doi.org/10.26633/RPSP.2021.80

Bolcato, M., Rodriguez, D., Feola, A., Di Mizio, G., Bonsignore, A., Ciliberti, R., Tettamanti, C., Aurilio, M. T., & Aprile, A. (2021). Covid-19 pandemic and equal access to vaccines. *Vaccines*, *9*(6), 1–11. https://doi.org/10.3390/vaccines9060538

Cheshmehzangi, A. (2022). Vulnerability of the UK's BAME communities during COVID-19: The review of public health and socio-economic inequalities. *Journal of Human Behavior in the Social Environment*, *32*(2), 172–188. https://doi.org/10.1080/10911359.2021.1875949

Eslava-Schmalbach, J., Rosero, E. B., & Garzón-Orjuela, N. (2021). Global control of COVID-19: Good vaccines may not suffice. *Revista Panamericana de Salud Publica/Pan American Journal of Public Health*, *45*, 1–7. https://doi.org/10.26633/RPSP.2021.148

Ekpenyong, A., & Pacheco, M. S. (2020). COVID-19: reflecting on the role of the who in knowledge exchange between the global North and South. *Global Social Policy*, *20*(3), 388-392. https://doi.org/10.1177/1468018120966657

Forman, L., & Kohler, J. C. (2020). Global health and human rights in the time of COVID-19: Response, restrictions, and legitimacy. *Journal of Human Rights*, *19*(5), 547–556. https://doi.org/10.1080/14754835.2020.1818556

Hasan, H. F. (2021). Legal and health response to covid-19 in the Arab Countries. *Risk Management and Healthcare Policy*, *14*, 1141–1154. https://doi.org/10.2147/RMHP.S297565

Haynes, K. (2020). Structural inequalities exposed by COVID-19 in the UK: the need for an accounting for care. Journal of Accounting & Organizational Change, 16 (4); 2020, 637-642. doi: 10.1108/JAOC-08-2020-0099

Keys, C., Nanayakkara, G., Onyejekwe, C., Sah, R. K., & Wright, T. (2021). Health Inequalities and Ethnic Vulnerabilities During COVID-19 in the UK: A Reflection on the PHE Reports. *Feminist Legal Studies*, *29*(1), 107–118. https://doi.org/10.1007/s10691-020-09446-y

Kluge, H., Martín-Moreno, J. M., Emiroglu, N., Rodier, G., Kelley, E., Vujnovic, M., & Permanand, G. (2018). Strengthening global health security by embedding the International Health Regulations requirements into national health systems. *BMJ Global Health*, *3*(2005), 1–7. https://doi.org/10.1136/bmjgh-2017-000656

Mathieu, E., Ritchie, H., Ortiz-Ospina, E., Roser, M., Hasell, J., Appel, C., Giattino, C., & Rodés-Guirao, L. (2021). A global database of COVID-19 vaccinations. *Nature Human Behaviour*, *5*(7), 947–953. https://doi.org/10.1038/s41562-021-01122-8

Mubangizi, J. C., & Mubangizi, B. C. (2021). Human rights and access to covid-19 vaccines in rural south Africa: The role of local government. *Journal of Southwest Jiaotong University*, *56*(4). https://doi.org/https://doi.org/10.35741/issn.0258-2724.56.4.54

Nafilyan, V., Dolby, T., Razieh, C., Gaughan, C. H., Morgan, J., Ayoubkhani, D., Walker, S.,

Khunti, K., Glickman, M., & Yates, T. (2021). Sociodemographic inequality in COVID-19 vaccination coverage among elderly adults in England: A national linked data study. *BMJ Open*, *11*(7), 1–6. https://doi.org/10.1136/bmjopen-2021-053402

Njoku, A., Joseph, M., & Felix, R. (2021). Changing the narrative: Structural barriers and racial and ethnic inequities in covid-19 vaccination. *International Journal of Environmental Research and Public Health*, *18*(18). https://doi.org/10.3390/ijerph18189904

Nwosu, C. O., & Oyenubi, A. (2021). Income-related health inequalities associated with the coronavirus pandemic in South Africa: A decomposition analysis. *International Journal for Equity in Health*, *20*(1), 1–12. https://doi.org/10.1186/s12939-020-01361-7

Okoi, O., & Bwawa, T. (2020). How health inequality affect responses to the COVID-19 pandemic in Sub-Saharan Africa. *World Development*, *135*, 105067. https://doi.org/10.1016/j.worlddev.2020.105067

Perry, M., Akbari, A., Cottrell, S., Gravenor, M. B., Roberts, R., Lyons, R. A., Bedston, S., Torabi, F., & Griffiths, L. (2021). Inequalities in coverage of COVID-19 vaccination: A population register based cross-sectional study in Wales, UK. *Vaccine*, *39*(42), 6256–6261. https://doi.org/10.1016/j.vaccine.2021.09.019

Perveen, S., Akram, M., Nasar, A., Arshad-Ayaz, A., & Naseem, A. (2022). Vaccination-hesitancy and vaccination-inequality as challenges in Pakistan's COVID-19 response. *Journal of Community Psychology*, *50*(2), 666–683. https://doi.org/10.1002/jcop.22652

Rađenović, T., Radivojević, V., Krstić, B., Stanišić, T., & Živković, S. (2022). The efficiency of health systems in response to the covid-19 pandemic: Evidence from the eu countries. *Problemy Ekorozwoju*, *17*(1), 7–15. https://doi.org/10.35784/pe.2022.1.01

Rodríguez-Bailón, R. (2020). Inequality viewed through the mirror of COVID-19 (La desigualdad ante el espejo del COVID-19). *Revista de Psicologia Social*, *35*(3), 647–655. https://doi.org/10.1080/02134748.2020.1796298

Seddighi, H. (2020). COVID-19 as a Natural Disaster: Focusing on Exposure and Vulnerability for Response. *Disaster Medicine and Public Health Preparedness*, *14*(4), E42–E43. https://doi.org/10.1017/dmp.2020.279

Shamasunder, S., Holmes, S. M., Goronga, T., Carrasco, H., Katz, E., Frankfurter, R., & Keshavjee, S. (2020). COVID-19 reveals weak health systems by design: Why we must re-make global health in this historic moment. *Global Public Health*, *15*(7), 1083–1089. https://doi.org/10.1080/17441692.2020.1760915

Sina-Odunsi, A. J. (2021). COVID-19 vaccines inequity and hesitancy among African Americans. *Clinical Epidemiology and Global Health*, *12*(August), 14–16. https://doi.org/10.1016/j.cegh.2021.100876

Siu, J. Y. man. (2021). Health inequality experienced by the socially disadvantaged populations during the outbreak of COVID-19 in Hong Kong: An interaction with social inequality. *Health and Social Care in the Community*, *29*(5), 1522–1529. https://doi.org/10.1111/hsc.13214

Spencer, N., Nathawad, R., Arpin, E., & Johnson, S. (2020). Pandemics, epidemics and inequities in routine childhood vaccination coverage: A rapid review. *BMJ Paediatrics Open*, *4*(1), 2019–2021. https://doi.org/10.1136/bmjpo-2020-000842

Su, Z., McDonnell, D., Li, X., Bennett, B., Šegalo, S., Abbas, J., Cheshmehzangi, A., & Xiang, Y. T. (2021). Covid-19 vaccine donations—vaccine empathy or vaccine diplomacy? A narrative literature review. *Vaccines*, *9*(9), 1–10. https://doi.org/10.3390/vaccines9091024

Mathieu, E., Ritchie, H., Ortiz-Ospina, E., Roser, M., Hasell, J., Appel, C., ... & Rodés-Guirao,

L. (2021). A global database of COVID-19 vaccinations. Nature human behaviour, 5(7), 947-953. https://doi.org/10.1038/s41562-021-01122-8

Taghizade, S., Chattu, V. K., Jaafaripooyan, E., & Kevany, S. (2021). COVID-19 Pandemic as an Excellent Opportunity for Global Health Diplomacy. *Frontiers in Public Health*, *9*(July), 1–9. https://doi.org/10.3389/fpubh.2021.655021

Taylor, A. L., Habibi, R., Burci, G. L., Dagron, S., Eccleston-Turner, M., Gostin, L. O., Meier, B. M., Phelan, A., Villarreal, P. A., Yamin, A. E., Chirwa, D., Forman, L., Ooms, G., Sekalala, S., & Hoffman, S. J. (2020). Solidarity in the wake of COVID-19: reimagining the International Health Regulations. *The Lancet*, *396*(10244), 82–83. https://doi.org/10.1016/S0140-6736(20)31417-3

United Nations Human Right Office of the High Commissioner. (2020). Human Rights and Acces to COVID-19 Vaccines. In *OHCHR*. https://www.ohchr.org/sites/default/files/Documents/Events/COVID-19_AccessVaccines_Guidance.pdf

Van De Pas, R., Widdowson, M. A., Ravinetto, R., N Srinivas, P., Ochoa, T. J., Fofana, T. O., & Van Damme, W. (2022). COVID-19 vaccine equity: a health systems and policy perspective. *Expert Review of Vaccines*, *21*(1), 25–36. https://doi.org/10.1080/14760584.2022.2004125

Watkinson, R. E., Williams, R., Gillibrand, S., Sanders, C., & Sutton, M. (2022). Ethnic inequalities in COVID-19 vaccine uptake and comparison to seasonal influenza vaccine uptake in Greater Manchester, UK: A cohort study. PLoS medicine, 19(3), e1003932. https://doi.org/10.1371/journal.pmed.1003982

Wildman, J. (2021). COVID-19 and income inequality in OECD countries. *European Journal of Health Economics*, *22*(3), 455–462. https://doi.org/10.1007/s10198-021-01266-4