

Original Research Article

Challenges in the COVID-19 vaccination among health care providers in Yangon region, Myanmar: a qualitative study

Khaing Lay Mon^{1*}, Swe Mar Myint Lwin¹, Le Thandar Soe², Megan Khoo³

¹Department of Health Behaviour and Communication, University of Public Health, Yangon, Myanmar

²Department of Nutrition and Food Safety, University of Public Health, Yangon, Myanmar

³Department of Neurobiology, Physiology and Behavior, University of California Davis, USA

Received: 10 February 2025

Accepted: 02 April 2025

*Correspondence:

Dr. Khaing Lay Mon,

E-mail: drlaymonuph@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The COVID-19 vaccination campaign is an ongoing worldwide effort to vaccinate a multitude of people to establish herd immunity. However, ensuring vaccine availability, equal distribution, and safe vaccination can be ethically and logically complex. This study was conducted to explore the challenges in managing the COVID-19 vaccination efforts by health care providers in Yangon Region, Myanmar.

Methods: A qualitative study was conducted from October 2022 to February 2023 among 28 health care providers, involved in various roles in the COVID-19 vaccination program. Individual in-depth interviews were carried out to explore the challenges from both the administrators' and implementers' perspectives. Manual thematic analysis was conducted using both deductive and inductive methods.

Results: The participants had mean (SD) service duration of 18.86 (9.79) years with 82% being female. Four main themes were identified (I) Inadequate resources for COVID-19 vaccination: such as insufficient number of health care providers, limited infrastructure including shortage of electricity, accommodations for vaccination, travel and transportation cost (II) poor community acceptance of COVID-19 vaccines due to socioeconomic disparity and low awareness (III) challenges due to management of different types of COVID-19 vaccines and (IV) "ways to successful vaccination campaign which included coordination with other organization, pre-vaccination training and AEFI management".

Conclusions: There were numerous challenges that interfered with the success of the ongoing mass COVID-19 vaccinations. Though many challenges were identified, better planning and resource management, adequate training, greater community involvement and a multi-sectoral partnership would bolster immunization efforts to combat COVID-19 infection.

Keywords: Challenges, COVID-19 vaccination, Health care providers, Myanmar

INTRODUCTION

The coronavirus disease 2019 (COVID-19) caused by a novel coronavirus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has emerged as one of the leading causes of death worldwide, making it one of the severe public health issues in recent decades.^{1,2} The rapid transmission of the pathogen along with its

mortality rate necessitated mass vaccination to establish herd immunity. The COVID-19 vaccination campaign is an ongoing worldwide effort to vaccinate large numbers of people against COVID-19 to control the rate of infection, reduce severe outcomes, and return to normal life.

There are four types of vaccines in clinical trials: whole virus, protein subunit, viral vector and nucleic acid (RNA

and DNA), each of which protects people, but by producing immunity in a slightly different way.³

There were several COVID-19 vaccines validated for use by WHO EUL (Emergency Use Listing). The first mass vaccination program started in early December 2020. The WHO EUL process determined whether a product was recommended for use based on all the available data on safety, efficacy and suitability in low- and middle-income countries. Vaccines are assessed to ensure that they meet acceptable standards of quality, safety, and efficacy based on clinical trial data. The assessment weighs the risks and benefits of each vaccine.

As of February 2021, there are 289 vaccines in development with about 66 in different stages of trials⁴. Following the national regulations and legislation, countries have the autonomy to issue emergency use authorizations for any health product.⁵ Currently, the available vaccines in Myanmar are Astra Zeneca/Covishield, Sinopharm, Sinovac, Covaxin, Sputnik Light, and Myancopharm.

According to vaccine efficacy reports, protection against all symptomatic disease after 2nd dose was 67 % for the AstraZeneca, 95% for the Moderna, 94% for Pfizer/BioNTech, 78% for Sinopharm, 51% for Sinovac.⁶ Based on all available evidence, WHO's Strategic Advisory Group of Experts on Immunization (SAGE) recommends the vaccine for adults 18 years and older, in a two-dose schedule with a spacing of three to four weeks. As of December 2022, nearly 70% of the world population has received at least one dose of a COVID-19 vaccine. However, in low-income countries, only 24.6 % of people have received at least one dose of a COVID-19 vaccine.⁷

In Myanmar, since January 20, 2021, the government has prioritized increasing COVID-19 vaccinations. However, vaccine coverage in Myanmar was lower compared to other Southeast Asian countries due to a variety of factors. As of July 2022, people who have received all doses prescribed by the vaccination protocol was 51.2%.⁸

For its effective protection, vaccines must be administered well in advance of any natural exposure or infection. Yet, ensuring vaccine availability can be ethically and logically complex. Problems arise from vaccine limitation, competing propriety groups, and vaccine acceptability. Moreover, poor or nonexistent infrastructures, limited societal health education, and the quality of the nation's institutions were potential barriers to vaccine implementation in most of the low- and middle-income countries.⁹ The development of a new vaccination program to control COVID-19 effectively is still an ongoing challenge among health care workers.

This study explores the challenges of the COVID-19 vaccination program in Yangon. The following were explored: planning, financing of delivery, infrastructure,

supply-chains, human resources for delivery, the population's willingness to vaccinate, monitoring and evaluation of delivery among health care providers in both the administrative and implementation level. It is important to explore the challenges in managing the COVID-19 vaccination program in Yangon. The result of the study can be applied as a foundation for future COVID-19 vaccination programs in Myanmar.

Furthermore, there are many studies related to COVID-19 vaccination, researching knowledge, attitude, perception, practice and vaccine hesitancy. However, there are limited studies related to challenges in provider sites, especially in the Yangon Region. This study is addressing the challenges in implementing COVID-19 vaccinations in Myanmar, specifically in the Yangon Region where the population density is the highest.

METHODS

Study area

Cross-sectional descriptive study using qualitative study conducted in all districts in Yangon Region.

Study period

Study was conducted for the period of three months i.e. 1st December 2022 to February 2023.

Study population

Administrators in the Department of Public Health, Yangon and Basic health staff (BHS) involved in the vaccination program with at least six months of experience.

Sample size determination and sampling procedure

Yangon Region was purposively selected for this study. A total of 28 health staff (two administrators and 26 BHS) were recruited for this study. There are 14 districts in the Yangon Region with one to two BHS (either midwives (MW), health assistants (HA), lady health visitors (LHV), pharmacists, public health supervisor I (PHS I), nurse, township health officer (THO) or township medical officer (TMO)) from each district who were involved in the COVID-19 vaccination program. With the permission of the respective authorities, participants were selected and asked for their consent to be involved in this study. Face to face in-depth interview with two administrators who were responsible for COVID-19 vaccination from the Department of Public Health and 26 BHS from the respective townships were conducted following the interview guidelines.

Data collection procedure

Data collection was done after receiving approval from the Institutional Review Board of the University of Public

Health (UPH-IRB). Prior to the interviews, interviewers explained the study purpose, provided participant information forms, and requested individual consent from the participants. The interviews lasted 30 - 40 minutes on average and was recorded after receiving consent from the participants. The interviewers have had previous experience in qualitative interviews, and the research team extensively discussed their approach prior to the interviews. Interviews were conducted in both Myanmar and English language. All interviews were conducted in the private settings.

Interviewers asked the participants to describe their role and expertise in relation to health policy decision making and vaccine delivery. The topics covered in the interview guide were derived on referencing other studies. It included vaccination experience, vaccination procedures, dealing with community, infrastructure, transportation, human resource, and monitoring, as well as strategies to overcome these challenges. The data collection process followed the preventive measures guidelines of COVID-19 infection transmission from the Ministry of Health, Myanmar.

Data analysis

All recordings from each interview were transcribed and translated into English. Deductive and inductive methods were used to analyze the data and identify the themes manually. Research team members reviewed each interview transcript and highlighted compelling segments of the data (quotations) that were meaningful, informative, and impactful. A codebook was developed

with code names and descriptions of codes. Subsequently, the codes were then combined with similar codes to develop themes and subthemes.

RESULTS

A total of 28 health care providers comprised of the deputy director, assistant director, TMO, THO, sisters, staff nurses, HA, LHV, MW, pharmacists, and PHS I in Yangon Region who had experience in COVID-19 vaccination were involved in the study. Age distribution of the study population ranged from 22 to 59 years with the mean standard deviation (SD) age of 44.57 (10.23) years. The majority of the participants were female, and they made up 82.1 % of the participants. The distribution of service years ranged from 1 year to 39 years with the mean (SD) service year of 18.86 (9.79) years. While providing COVID-19 vaccination services, health service providers encountered many challenges and difficulties. After conducting a thematic content analysis, four main themes were identified: (1) challenges due to resources for COVID-19 vaccination, (2) poor community acceptance to COVID-19 vaccines (3) challenges due to management of different types of COVID-19 vaccines, and (4) ways to successful vaccination campaign (Table 1).

Theme I: Challenges due to resources for COVID-19 vaccination

The study found that most healthcare providers faced challenges related to insufficient resources, including both human and material resources.

Table 1: Themes and subthemes of in-depth interviews with health care providers.

Themes	Sub-themes	Definition
I. Challenges due to resources for COVID-19 vaccination	a. Human resources	Insufficient number of health care providers including skilled personnel
	b. Materials resources	Limited infrastructure such as accommodation for vaccination, shortage of electricity, shortage of materials for vaccination, travel costs for transportation of vaccines and health staff
II. Poor community acceptance of COVID-19 vaccines	a. Socioeconomic disparity of community	Poor acceptance to COVID-19 vaccination due to workplace conditions and residence
	b. Low awareness of community	Inadequate access to health information, misinformation and mistrust of the vaccine as well as health care providers
III. Management of different types of COVID-19 vaccines	a. Storage requirements	Storage for different types of vaccines
	b. Transportation	Challenges during transportation of different types of COVID-19 vaccines with different cold chain systems from central to peripheral levels
IV. Ways to successful vaccination campaign	a. Coordination with other organizations	Other government organizations, non-government organization, community-based organizations, and Charity organizations
	b. Pre-vaccination training	Pre-vaccination training about storage, transportation, screening, vaccination and AEFI management

Insufficient human resources

One of the challenges encountered during the early phase of widespread COVID-19 vaccination to communities in urban and rural areas of most townships was the shortage of healthcare providers and the heightened workload. Because of the increased demand from the community, service providers faced an increased workload in addition to their regular duties. During the early phase, a single vaccination team vaccinated more than 200 to 300 people per day, which became a huge challenge for them. Due to shortage of manpower, health care providers were unable to record vaccination registrations in detail. Moreover, the limited number of well-trained personnel for vaccine storage and administration in some townships was another challenge. The following quotations reflect the challenges due to shortage of health care providers.

In 2021, we faced a severe shortage of manpower. There were only three of us-myself, someone from the hospital, and another from public health. We didn't have a designated CCKP (cold chain key person). Living in the service quarter, I also performed the duties of the CCKP.

(Female, MW, UHC, 5 years of service)

In the beginning, even drawing the vaccine into the syringe was a challenge. Prior to attempting it on my own, I observed others doing it and assumed it was a straightforward task.

(Female, MW, UHC, 1-year of service)

Limited materials resources

In the mass vaccination program, having sufficient material resources is essential to ensure the smooth and effective vaccination. A major challenge that most townships faced regarding vaccine storage was electricity shortage and power supply issues. In contrast, two participants from the tertiary hospitals and two participants from township hospital mentioned that the shortage of electricity and voltage irregularity were not problems they faced in their respective hospitals. When government schools were closed during COVID-19, some urban townships used these schools as community vaccination sites. However, after the schools were reopened, finding a large accommodation for vaccinations became a problem. Out of 28 respondents, three respondents mentioned that there was a shortage of auto disable syringes during the mass vaccination program. In some townships, the vaccine was transported to rural areas by charity organizations. While in other townships, the vaccines were carried by basic health staff by their own means. About half of participants described that the vaccine transportation cost and the travelling cost for the basic health staff were additional challenges faced in mass vaccination. The following quotations reflect the challenges encountered due to material resources.

We're facing an issue with electricity, making it challenging to maintain the cold chain. I had to monitor it closely due to frequent power interruptions. When the indicators display +2 to +3, we need to switch from the cold chain to a smaller expanded program for immunization (EPI) cold chain carrier box. If there's no ice available, we must purchase some and add it. Once the electricity is restored, I have to return it to the ice lined refrigerator (ILR). There are instances where the power outage exceeds 24 hours, requiring me to search for ice packs throughout the entire township.

(Female, Health assistant, RHC, 20 years of service)

In the past, it was consistently linked to the power line. This township experiences minimal power outages, which is advantageous for the cold chains as they are only disrupted for brief periods. The electricity situation poses no significant issues for the cold chain.

(Male, TMO, Township hospital, 18 years of service)

In the slum areas, we selected the house of the leader of that ward. We had chosen the extension of the leader's house where the sun does not shine directly. There are some difficulties in choosing a vaccination place."

(Female, acting TMO, UHC, 9 years of service)

"Going to the regional office to get medicine, the expenses for the BHS to come and receive the medicine... that is the most difficult. There is no budget for this and it cannot be explained with an audit. We do not receive donations here."

(Male, TMO, Township hospital, 18 years of service)

Theme II: Poor community acceptance of COVID-19 vaccines

Poor community acceptance to COVID-19 vaccination was a situation where a certain proportion of the population was unwilling or hesitant to receive COVID-19 vaccines. Some of the challenges identified in the current study were socioeconomic disparity of community and low awareness.

Socioeconomic disparity of community

Health care providers in rural areas faced resistance when it came to COVID-19 vaccination due to the socioeconomic disparity of community such as low education level, workplace conditions, poverty, and residence. The following quotation is an example reflecting the lack of community acceptance due to socioeconomic disparity.

Here, they are very poor here. Being poor, it is not convenient to come to vaccination site. They go to work in the brick field. There are over a hundred brick fields on

this village tract. I don't know which brickfield they go to. Sometimes I think I'm done with the first dose, but there are still people left. Some don't get the vaccine because of their occupation.

(Female, Health assistant, RHC, 20 years of service)

Low awareness of community

In the urban area, poor acceptance was mainly related to low community awareness and difficulty to receive information about vaccines from health care providers.

In the beginning, they asked 'Is this vaccine good?' They were talking outside at that time, and they said, 'Why are they giving me injections?' How much can one assure if this is good or bad medicine, doctor?

(Female, acting TMO, UHC, 9 years of service)

Most of the people from one ward were not vaccinated because they abuse drugs. They believed that if they injected the COVID vaccine, there would be an adverse drug reaction.

(Female, acting TMO, UHC, 9 years of service)

Theme III: Challenges related to management of different types of COVID-19 vaccine

When interviewing about COVID-19 vaccinations, the availability of different COVID-19 vaccines have introduced additional challenges to the vaccination efforts.

Storage requirement and transportation

While having multiple vaccines is a positive development, it has led to several complexities in storage and transportation. Although the Ministry of Health had prepared to use heat-sensitive COVID-19 vaccines in selected townships, issues still arose related to infrastructure, logistics, and resources. Some of these issues included cold chain infrastructure, limited access to reliable electricity, and transportation challenges.

At the time of Sputnik, we dropped it using cold chain cars according to townships. I don't have to worry too much about vaccines like Covishield and Sinopharm, which require temperatures between 2 to 8 degrees Celsius. They already have ILRs ready. We need more freezers for freeze vaccine like Sputnik Light. After distributing the vaccine, I can monitor the temperature from the internet 24 hours a day. If there's a power outage and the temperature rise, we have to arrange everything, such as running a generator.

(Female, deputy director, health office, 18 years of service)

Theme IV: Ways to successful vaccination campaign

The findings highlighted two key strategies for successful immunization: coordination with other organizations and pre-vaccination training.

Coordination with other organizations

In every township, there was a coordination between the Ministry of Health and other government and non-government organizations in the implementation of the national COVID-19 vaccination program.

"Through the township administrator and with the help of community service organizations (CSOs), we can vaccinate the elderly people living in the ward or at their domiciles. For others, the vaccination section is open at the township hospital. Charity groups have 45 ambulances. Domiciliary visits and vaccinations are carried out with these ambulances. In this township, cooperation with CSOs are strong. Because of this, difficulties are reduced by 50%."

(Male, HA, township hospital, 27 years of service)

Pre-vaccination training

Almost all participants received pre-vaccination training on storage, transportation, screening, vaccination, and AEFI (adverse event following immunization) management. Although a few severe AEFI cases were reported, no mortality was attributed to COVID-19 vaccination. This was due to pre-vaccination screening and proper AEFI management training. The following is an example of successful immunization due to pre-vaccination training.

AEFI is certainly not something to dismiss, casualties can potentially amount to millions. Even if the AEFI rate is just 0.1 percent, it translates to hundreds of thousands when dealing with millions. I encountered AEFI with various vaccines like Covishield, Sinopharm, Covaxin, AstraZeneca-practically all the vaccines. Fortunately, few cases were severe, but there were no mortality and we can manage very well.

(Female, deputy director, health office, 18 years of service).

DISCUSSION

Vaccination remains to be the most effective way to prevent hospital stays, long-term health problems, COVID-19 deaths.¹⁰ The success of vaccination programs depends on increasing and maintaining vaccination uptake.¹¹ To implement a more successful COVID-19 vaccination program, it is essential to address the challenges of health care providers

The results of this qualitative study revealed that while there were some obstacles, the COVID-19 vaccination efforts in Myanmar were more successful than expected. Insufficient resources, poor acceptance of community acceptance to vaccination, struggles in managing the different types of vaccines, and ways to successful immunization were identified as major themes from the study.

Most of the findings of our research were similar to the studies conducted in Romania, Afghanistan, a study conducted in low -and middle-incomes countries (LMIC), Latin America and the Caribbean region.¹²⁻¹⁵ However, there were some exceptions.¹²⁻¹⁵ In the Afghanistan study, cultural issues, insecurity, and protracted conflict were barriers to vaccination.¹³ Whereas, our study was conducted only in the Yangon Region, the most socioeconomically developed region in Myanmar, therefore there were no cultural issues, insecurity, or protracted conflict.

The study conducted in LMIC, highlighted challenges in vaccine procurement and the limited capacity to respond the potential adverse effects of the vaccination.¹⁴ However, in our study, none of the participants were involved in the procurement process, making it less challenging at the implementation level. Moreover, proper AEFI management was one way to successful immunization in this research.

To increase vaccine uptake and demand, engagement with the community and strengthening the quality of services are also required. Enhancing the quality of immunization services can lead to several advantages, such as better health care and system performance.¹¹ Increased vaccination coverage and efficiency leads to more equitable access to services closing the gap for underprivileged people.¹¹ The transportation and storage requirements of the COVID-19 vaccine caused a challenge in distribution.¹⁶ This was also seen in our study, although health care providers in Myanmar tirelessly managed the vaccines to the best of their ability, storage and transportation was still a challenge. Fortunately, there were many community-based organizations in townships, which supported the transportation of COVID-19 vaccines in some areas.

The development of COVID-19 vaccines has been an extraordinary success, vaccinating most of the global population is an enormous challenge, one for which gaining and maintaining public trust in COVID-19 vaccines and vaccination will be as essential as the effectiveness of the vaccines themselves.¹⁷ Rumors and misinformation about COVID-19 vaccinations also contributed to the challenges. False information on social media and the internet influenced people's perspectives, and increased their reluctance to receive the vaccination.¹⁶ Similarly, there were some misconceptions among the community regarding COVID-19 vaccination according to the responses of the health care providers.

Nevertheless, they overcame these difficulties by educating the public about the COVID-19 vaccines both before and during the vaccination procedures.

Since 2006, Myanmar has been listed as one of the 57 crisis countries facing critical health workforce shortages.¹⁸ Almost all of the Regions of Myanmar were unable to meet the recommended WHO minimum threshold for medical doctors and health workforce.¹⁸ Another precipitating factor of insufficient human resources mentioned by the health care providers in this study was due to the situation of political crisis. As the nature of qualitative research, the study results can only be generalized to the similar contexts within this study area.

CONCLUSION

In conclusion, the findings of this research shed light on the multifaceted challenges faced by health care providers in Yangon Region, Myanmar, during the COVID-19 vaccination campaign. The identified themes encompassed resource constraints, community acceptance issues, logistical challenges related to vaccine types, and strategies for successful immunization. As the global community continues its efforts to fight against the COVID-19 pandemic, the findings of this study provide valuable guidance for policymakers, healthcare administrators, and frontline workers. By addressing these challenges head-on, a more resilient and efficient vaccination infrastructure will be developed not only in Yangon Region, but also as an established model for other States and Regions.

ACKNOWLEDGEMENTS

We would like to thank all health care providers who give consent willingly and participated in the study and Ministry of Health for financial assistance.

Funding: The research was financially supported by implementation research grant, Ministry of Health, Myanmar

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Review Board of the University of Public Health, Yangon with Certificate of Approval No. UPH-IRB (2022/IR/1)

REFERENCES

1. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Bio Medica Atenei Parmensis*. 2020;91(1):157-60.
2. Troeger C. Just How Do Deaths Due to COVID-19 Stack Up?| Think Global Health. Retrieved October 6, 2023. 2023
3. COVID-19 vaccines: everything you need to know Gavi, the Vaccine Alliance. Available at: <https://www.gavi.org/covid19->

- vaccines?utm_campaign=Campaign%202&utm_medium=Medium%201&utm_source=Source%2010&gclid=CjwKCAiAp7GcBhA0EiwA9U0mthWoAf-ajrTQIOmUuSR06ZBUBBy8CmcdvUA56o2UwkBqZ0-7Chj5VthoCeAAQAvD_BwE. Accessed 04 December 2022.
4. Sheikh AB, Pal S, Javed N, Shekhar R. COVID-19 vaccination in developing nations: challenges and opportunities for innovation. *Infect Dis Rep*. 2021;13(2):429-36.
5. World Health Organization. Coronavirus disease (COVID-19): Vaccines. Available at: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-\(covid-19\)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=CjwKCAiAp7GcBhA0EiwA9U0mtvV2HwxS5DWGiIdurmENpImLRjRjDqNtLYVzBR4kqEPJvotwfV3BRRoCaXAQAvD_BwE](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-(covid-19)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=CjwKCAiAp7GcBhA0EiwA9U0mtvV2HwxS5DWGiIdurmENpImLRjRjDqNtLYVzBR4kqEPJvotwfV3BRRoCaXAQAvD_BwE). Accessed 04 December 2022.
6. Gavi, the Vaccine Alliance. How effective are COVID-19 vaccines in the real-world? Available at: https://www.gavi.org/vaccineswork/how-effective-are-covid-19-vaccines-real-world?gclid=CjwKCAiAp7GcBhA0EiwA9U0mtryQGaxCqRbSYTVZlVzfP2u1aKWPGd2etmbbhp1VF0bKDRSKkRqHRC9S8QAvD_BwE. Accessed 04 December 2022.
7. Our World in Data. Coronavirus (COVID-19) Vaccinations, 2024 Available at: <https://ourworldindata.org/covid-vaccinations>. Accessed 04 December 2022.
8. Reporting ASEAN - Voices and views from within Southeast Asia. ASEAN Report-In Numbers: COVID-19 Vaccination in Southeast Asia, 2023. Available at: <https://www.reportingasean.net/in-numbers-covid-19-vaccination-in-southeast-asia/>. Accessed 04 December 2022.
9. Arifin B, Anas T. Lessons learned from COVID-19 vaccination in Indonesia: experiences, challenges, and opportunities. *Human Vaccines & Immunotherapeutics*. 2021;17(11):3898-906.
10. CDC. Centers for disease control and prevention. 2023 benefits of getting a COVID-19 vaccine. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccine-benefits.html>. Accessed 08 November 2023.
11. World Health Organization. Acceptance and demand. Available at: <https://www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/demand>. Accessed 08 November 2023.
12. Dascalu S, Geambasu O, Covaciu O, Chereches RM, Diaconu G, Dumitra GG, et al. Prospects of COVID-19 vaccination in Romania: challenges and potential solutions. *Front Publ Heal*. 2021;9:644538.
13. Wardak MF, Rahimi A, Ahmadi A, Madadi S, Arif S, Nikbin AM, et al. COVID-19 Vaccination Efforts: Is Afghanistan Prepared? *Am J Trop Medi Hyg*. 2021;105(5):1137–40.
14. Mesa-Vieira C, Botero-Rodríguez F, Padilla-Muñoz A, Franco OH, Gómez-Restrepo C. The Dark Side of the Moon: Global challenges in the distribution of vaccines and implementation of vaccination plans against COVID-19. *Maturitas*. 2021;149:37-9.
15. Rodriguez-Morales AJ, Franco OH. Public trust, misinformation and COVID-19 vaccination willingness in Latin America and the Caribbean: today's key challenges. *The Lancet Regional Health - Americas*. 2021;3:100073.
16. Yarlagadda H, Patel MA, Gupta V, Bansal T, Upadhyay S, Shaheen N, et al. COVID-19 vaccine challenges in developing and developed countries. *Cureus*. 2022;14(4):e23951.
17. OECD. Enhancing public trust in COVID-19 vaccination: The role of governments. Available at: https://read.oecd-ilibrary.org/view/?ref=1094_1094290-a0n03doefx&title=Enhancing-public-trust-in-COVID-19-vaccination-The-role-of-governments. Accessed 08 November 2023.
18. Saw Y, Than T, Thaung Y, Aung S, Shiao L, Win E, et al. Myanmar's human resources for health: current situation and its challenges. *Heliyon*. 2019;5(3):e01390.

Cite this article as: Mon KL, Lwin SMM, Soe LT, Khoo M. Challenges in the COVID-19 vaccination among health care providers in Yangon region, Myanmar: a qualitative study. *Int J Community Med Public Health* 2025;12:2036-42.