

Research Article

Managing COVID-19 from the Nurses' Perspectives at Primary Healthcare Facilities in Maseru Lesotho

Letuka James Phiri^{1,*} , Isabel Nyangu² , Mpho Shelile¹ 

¹Nursing and Midwifery, National University of Lesotho, Maseru, Lesotho

²Public Health, Edinburgh Napier University, Edinburgh, United Kingdom

Abstract

Background: Nurses are at the forefront of the fight against COVID-19. The modest number of perspectives among healthcare practitioners remained an issue, particularly in developing nations such as Lesotho. **Objectives:** This study aimed to assess the perspectives of nurses working in the primary healthcare setting on managing COVID-19 in Lesotho. **Method:** A quantitative descriptive cross-sectional survey design was used to collect data using a structured questionnaire from a conveniently selected sample of nurses. Data were analysed using SPSS, and the results were presented using descriptive and analytic statistics. **Results:** A total of 120 nurses completed the questionnaire, with a 100% response rate. Very few proportions of nurses received formal training (52.4%) and were taught and trained on the safe and accurate ways of using personal protective equipment (PPE) (21.8%) as a preventative measure. Less than half (36.7%) of the participants could implement guidelines to screen, report a suspected case (32.5%) and manage confirmed cases of COVID-19 (30.8%). The levels of knowledge and practices for the pandemic were moderate during the study. There was a significant correlation between the nurses' knowledge and practices [$X^2(442, N=120)=1022.6, p<.05$] in the management of COVID-19. **Conclusion:** The level of perspectives of nurses in Lesotho was moderate regarding the management of COVID-19. Unsatisfactory numbers of nurses were reasonably knowledgeable and capable of implementing pandemic response measures. This study provides the information necessary for health authorities to prioritise training programmes that support nurses during COVID-19 and other similar pandemics.

Keywords

COVID-19, Knowledge, Practices, Nurse, Perspectives, Primary Healthcare

1. Introduction

COVID-19 is a worldwide dilemma that affects nations and continents in varying degrees and rates. The COVID-19 pandemic had disastrous effects on developing and poor nations [1]. Globally, nurses had a lower degree of preparation, emphasising the significance of education training programmes to control and prevent infection from COVID-19. Throughout the COVID-19 pandemic, nurses continued to be

on the front lines. Eleven million nurses work directly with patients, families, and communities worldwide [2]. Approximately 7% of all COVID-19 cases occurred among healthcare workers. According to the International Council of Nurses (ICN) report in Geneva (2020), over 450,000 nurses were infected with COVID-19 worldwide [2].

The COVID-19 epidemic put the world's health systems to

*Corresponding author: phirileduga@gmail.com (Letuka James Phiri)

Received: 13 May 2024; **Accepted:** 5 June 2024; **Published:** 29 June 2024



Copyright: © The Author (s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

the test, particularly in low- and middle-income nations. Lesotho announced the first index case on May 13, 2020. There were 29,652 cases confirmed overall by December 2021. There were 13,159 active cases, a death toll of 671 and recovered patients were 15,822 [3]. Strengthening primary healthcare, which is typically regarded as the frontline of health systems, is critical to mitigating indirect negative health impact and reducing hospital load from COVID-19. Nurses employed in critical care, emergency medicine, infectious diseases, and pulmonary medicine departments were more susceptible to COVID-19. To minimise hospital-acquired illnesses caused by cross-contamination with other patients receiving care in these departments, proper training, knowledge, and resources were required [4, 5]. It has been demonstrated that infection control practices like hand washing, social distancing, and correctly wearing and doffing personal protective equipment (PPE) reduce the transmission of the virus [6].

Following the one-and-a-half-year COVID-19 pandemic, numerous countries, including Lesotho, experienced shortages of ICU beds, isolation beds, and related supplies in addition to challenges accessing oxygen. As a result, the nation's case fatality rate was elevated. The COVID-19 pandemic fanned the flames of the HIV/AIDS and Tuberculosis crisis already raging in Lesotho's primary health care system. The task that faced the government of Lesotho was to establish an atmosphere that was conducive to long-term economic expansion and job creation, providing social services at a sustainable level, and lessening the impact of COVID-19 [7].

Pandemics are by their very nature unpredictable. Therefore, health systems, in addition to mitigation and suppression tactics, and especially healthcare personnel's readiness to respond to pandemics, are essential to limiting the spread of disease [6]. Prior research on epidemics, including Ebola and other severe acute respiratory syndromes, has shown that healthcare personnel's perspectives are crucial for both successfully controlling epidemics and preventing them from diverting their attention from treating other conditions that could result in avoidable deaths [8-10]. Many questions have been raised about how well-prepared and able to keep control of the various countries were for COVID-19. Numerous healthcare professionals reported being unprepared and unaware of COVID-19 [11]. This sparked questions about how well-equipped Lesotho's nursing staff and healthcare system were to handle COVID-19 infections. Despite these worries and Lesotho's inadequate healthcare system, medical personnel persevered during COVID-19, putting their lives in danger to save patients. The assessment of the nursing workforce's readiness was crucial for ensuring that they were ready to face any future healthcare hurdles. Healthcare personnel's knowledge and practices regarding COVID-19 have an impact on how closely they adhere to control measures. The purpose of the current study was to assess nurses' perspectives on managing COVID-19 in Lesotho. The insights gained from this research could help healthcare systems in the

region and worldwide to address comparable challenges.

2. Materials and Methods

Study design: a descriptive cross-sectional survey research design was used.

Setting: the study was conducted in twenty-seven primary healthcare centres managed by the Maseru district health management team. These facilities were owned by the Ministry of Health and the Christian Health Association of Lesotho (CHAL).

Study population and sampling strategy: the target population was all nurses who were working at primary healthcare facilities in the Maseru district. Purposive inclusive sampling was used to select 27 healthcare centres found in Maseru while convenience sampling was used to sample 120 nurses working in PHC facilities at the time of the study.

Data collection:

The structured questionnaire was used to collect data following ethical clearance. The questionnaire was subjected to expert and peer review before it was administered. The literature review with similar research questions guided the development of the questionnaire [12-16]. Likewise, it was piloted with ten eligible individuals to ensure its validity and reliability. The data was collected from the 30th of August to the 9th of September 2022. The researcher made the appointments with the nursing officers and was granted permission to administer the questionnaire. The researcher physically administered the questionnaires for the remote areas and collected the completed questionnaire the following day. The questionnaires were given to the respondents after the researcher had ensured that the participants met the inclusion criteria and provided voluntary informed consent. The response rate was 100% and all questions were completed. Information about the study was given to the participants and they were allowed to withdraw from the study without prejudice.

Data analysis:

Data was analysed using Statistical Package for the Social Sciences (SPSS) version 27. Analysis was done using descriptive and inferential statistics.

Ethical clearance: Ethical clearance and permission were sought from the National University of Lesotho Institutional Review Board and the Ministry of Health Research and Ethics Committee (ID: 59-2022). Furthermore, permission to conduct the study was also sought from gate-keepers, the DHMT and Nursing Officers at the primary healthcare facilities.

3. Results

Demographic information

The majority of the participants were females (69.2%, n=83), in the age range of 20-30 years at 53.3% (n=64), and were registered nurse midwives (84.2%, n=101) with a di-

ploma as their highest educational qualification, 26.7% (n=32). The majority of nurses (54%, n=45%) had worked at the facility for one to two years, and 71.7% (n=86) had less than five years of experience. The majority of nurses (89.2%, n=107) worked at the facility for six to eight hours every day. The bulk of participants (68.3%, n= 82) were employed by the government, with NGOs coming in second (20.8%, n= 25). For the majority of participants, media (22.6%, n=27), training courses (28.4%, n=34), and discussions with colleagues (29.1%, n=35) were the main sources of information.

Knowledge of the participants about COVID-19

Majority of the participants did not receive any formal training on waste segregation (7.6%, n=13), use of PPE (21.8%, n=37), respiratory hygiene (47.6%, n=81), hand hygiene (7.1%, n= 12), and disinfection (8.8%, n=15). There was a significant association between training modules received and gender [$X^2(6, N=120) = 17.2, p<.05$], work experience [$X^2(6, N=120) = 19.8, p<.05$] and employer of the

participants [$X^2(8, N=120) = 9.64, p<.05$]. The majority of the participants stated that fever (40.0%, n=120) was the first major symptom of COVID-19. It is highlighted that most of the participants 30.7% (n=109) stated that wearing a face mask could prevent transmission of COVID-19. Knowledge on treatment of COVID-19 was found to have association with age [$X^2(3, N=120) = 10.7, p>.05$] and highest educational qualification [$X^2(2, N=120) = 6.167, p<.05$]. [Table 1](#) elaborates the results further.

[Table 3](#) further establishes the knowledge of the respondents regarding COVID-19. The respondents (94.2%, n=113) stated that it was true that the virus causing COVID-19 disease was known as SARS-CoV-2, while 5.0% (n=6) indicated that the statement was false. About 78.3% (n=94) pointed out that the incubation period was best described as from the moment of exposure to an infectious agent until signs and symptoms of the disease appeared, whereas 21.7% (n=26) of the respondents stated the statement to be incorrect.

Table 1. Knowledge of the participants about COVID-19.

Variable	Frequency (n=120)	Percentage (%)
Training modules received		
Hand hygiene,	13	7.6
Disinfection or sterilisation,	12	7.1
Waste segregation,	15	8.8
Use of PPEs,	37	21.8
Respiratory hygiene	12	7.1
Did not receive any training on the aforesaid modules.	81	47.6
Major symptoms of COVID-19		
Fever	112	40.0
Cough	100	35.7
Sore throat	42	15.0
Dysnea	9.3	26
Preventative measures of transmission of COVID-19		
Wearing a face mask	109	30.7
Hand wash	95	26.8
Hand sanitizer	33	9.3
Social distancing	82	23.1
Vaccination	35	9.9
Hesitant to respond to the question	1	0.3
Clients more at risk of getting infected by COVID-19		
immune compromised	97	41.8
clients with lungs problems	44	19.0
elderly clients	44	19.0

Variable	Frequency (n=120)	Percentage (%)
health practitioners	41	17.7
uncertain	1	2.6
Complications of COVID-19		
Respiratory failure	71	38.0
other organ's failure	32	17.1
death	76	40.6
did not know	8	4.3
Diagnosis of COVID-19		
Clinical suspicion or screening	24	16.4
DNA PCR	107	72.8
CT scan	4	2.7
not sure	11	7.5

Table 2. Basic knowledge of the nature of COVID-19.

	True	False
The virus causing Coronavirus-19 disease is now known as SARS-CoV-2.	n=113 94.2%	n=6 5.0%
The incubation period is best described as from the moment of exposure to an infectious agent until signs and symptoms of the disease appear.	n=94 78.3%	n=26 21.7%
Coronavirus symptoms may appear immediately after exposure to the virus.	n=76 63.3%	n=44 36.7%
Currently, there is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	n=101 84.2%	n=19 15.8%
It is unlikely for the patient who had been positive of COVID-19 to be re-infected after recovery.	n=51 42.5%	n=68 56.7%

Practices of the participants regarding COVID-19

As shown in Table 3, 63.3% (n=76) were able to assess and triage patients with respiratory symptoms and (80.8%, n=97) of the participants were able to accurately put on PPE and doff it accurately (80.0%, n=96). A Chi-Square test showed that work experience significantly influenced the ability of nurses to assess and triage patients with respiratory symptoms [$X^2(2, N=120)$

=13.1, $p<.05$]. Few participants (3.3%, n=4) could not safely and accurately don and doff PPE. Most of the participants (55.8%, n=67) were able to implement standard contact precautions. The results displayed that there was statistical significance between the ability to implement standard contact precautions with work experience [$X^2(2, N=120) = 17.7$, $p<.05$] and the employer of the participants [$X^2(4, N=120) = 11.7$, $p<.05$].

Table 3. Practices of participants regarding COVID-19.

	Agree		Neutral		Disagree	
	n	%	n	%	n	%
Ability to assess and triage patients with respiratory symptoms	76	63.3	40	33.3	4	3.3
Ability to accurately put on PPE	97	80.8	19	15.8	4	3.3

	Agree		Neutral		Disagree	
	n	%	n	%	n	%
Ability to safely take off PPE	96	80.0	20	16.7	4	3.3
Availability of PPE all the time	54	45.0	57	47.5	8	6.7
Ability to implement standard contact precautions	52	43.3	67	55.8	52	43.3
Ability to implement standard airborne precautions	59	49.2	60	50.0	1	0.8
Ability to educate the public about COVID-19	91	75.8	23	19.2	6	5.0
Ability to ration scarce lifesaving commodities	68	56.7	35	29.2	17	14.2
Availability of informational materials about COVID-19 at the facility	46	38.3	62	51.7	12	10.0
Ability to ensure qualities of COVID-19 isolation room	33	27.5	72	60.0	15	12.5
Ability to implement guidelines to report suspected case	39	32.5	67	55.8	9	7.5
Ability to implement protocols when screening COVID-19	44	36.7	67	55.8	9	7.5
Ability to implement protocols when managing COVID-19	37	30.8	74	61.7	9	7.5

Correlation between knowledge and practice

The results showed that there was a significant correlation between knowledge regarding COVID-19 and the practice of preventing and managing COVID-19 [$X^2(442, N=120) = 1022.6, p < .05$]. The ability to assess and triage patients with respiratory symptoms had a significant correlation with sources of information [$X^2(8, N=120) = 17.4, p < .05$]. The results further displayed that there was statistical significance between the ability to implement standard contact precautions with sources of information [$X^2(8, N=120) = 21.7, p < .05$] and training modules received [$X^2(12, N=120) = 23.4, p < .05$].

4. Discussion

The participants in this study had an optimally fair knowledge of COVID-19. The nurses understood a fair amount about COVID-19, but the country had already passed its peak. It's possible that nurses were among those inadvertently dispersing COVID-19. Results from numerous investigations were largely consistent with this study [17, 11, 15, 18]. The results of the current study showed that conversing with colleagues on various platforms was the primary source of information regarding COVID-19. According to other participants, they learned about COVID-19 from the media, free online courses, and training sessions. This is dissimilar to the research that was done in other countries, where most of those who participated in their surveys mostly sourced their information from the Internet [19-21]. However, this discrepancy may have to do with the type of participants who were studied as they differed between the studies.

A minority of the participants had formal training, and of those that did, the majority only learned how to use PPE correctly and safely as a preventative precaution against

COVID-19. Almost half of the respondents did not receive any formal training on waste segregation, respiratory hygiene, hand hygiene and disinfection or sterilisation. This is consistent with other studies, where it was found that lack of or insufficient knowledge and poor perspectives were associated with lack of training which led to confusion among nurses [22, 23].

The study findings revealed that the respondents with a higher educational background were more aware of the symptoms of COVID-19. The way COVID-19 progressed could be changed by behavioural adjustments made in response to the disease. Understanding preventive actions may result in behavioural changes, which may impact nurses' readiness for managing COVID-19. A fair number of the respondents were knowledgeable about preventative measures for COVID-19. This was similar to other studies which revealed that healthcare workers were knowledgeable of COVID-19 preventative measures and most of the respondents mentioned social distancing followed by avoiding travelling to the infected areas or country [24]. In a study conducted in Borno State, most of participants who had greater than ten years of work experience had better knowledge [25]. This is not the case in this study as no association was found between the work experience of the respondents and their knowledge of preventative measures.

Some of the nurses did not consider themselves at high risk of getting infected with COVID-19. On the contrary, the study conducted at Lahore Medical College revealed that the respondents (91.9%) considered all healthcare workers to be at a higher risk of infection [26]. The current study findings were alarming because a wide range of nurses were involved in caring for cases of this exceedingly communicable illness. Nurses were in close contact with COVID-19 cases and as a result, they were to spread the disease. Inadequate knowledge

is a risk factor for disease transmission, as it can lead to low levels of care. Respondents with higher educational qualifications were found to be more knowledgeable about clients who were more susceptible to getting infected with COVID-19. Furthermore, work experience and working hours per day at the facility were found to be associated with the knowledge of clients at more risk of getting infected. The number of hours spent at the health facility per day was linked to greater experience which in turn, leads to the number of opportunities for education and training [25].

Practices

Nursing practice is correlated with levels of education hence nurses are to be equipped with knowledge for proper understanding of the care of their clients [27]. The knowledge is supposed to be applied in caregiving. The current study findings revealed that most of the respondents (63.3%) were able to assess and triage patients. Conversely, the study conducted in Libya reported that only 23.9% of nurses knew the criteria for evaluating persons under investigation for COVID-19 infection. In addition, very few knew how to report potential COVID-19 cases, which could prompt an unexpected increase in undiagnosed cases, thereby increasing the burden of infection within the community [15]. Work experience as a nurse was found to positively affect the ability to assess and triage patients with respiratory symptoms, with more experienced nurses being more able to assess and triage clients with respiratory distress. Similarly, in a study conducted in a Tertiary Hospital in Southern Nigeria, many of the respondents who had more than 10 years of work experience had better skills to triage the patients [28]. Experience comes with the years of services rendered and the number of opportunities for training increases with time. Less experienced workers are less knowledgeable of infection prevention and control and this puts them at risk of acquiring infections in the line of duty [28]. Greater efforts should, therefore, be geared towards integrating more training on infection prevention.

Nurses should contact the patients using full personal protective equipment to ensure maximum protection. The present study reveals that PPE was not always readily available at the facilities. This is confirmed by 47.5% of the study respondents. The study conducted in Gaza and the West Bank demonstrated that the availability of PPE was insufficient to support the COVID-19 response needs in most African countries. Alcohol-based hand sanitizers, gloves, face masks, eye protection, isolation gowns, N95 respirators and face shields were reported to be inconsistently available, despite being internationally recommended as critical equipment needed for protecting healthcare workers from infection. In some settings, nurses had to purchase PPE out of their pockets due to a lack of it at the health facilities [15]. The study findings displayed that there was no statistical significance between demographic variables and the ability to accurately put on and off PPE.

There are guidelines which were developed at combating COVID-19. These guidelines specified the compulsory

equipment and consumables, required training, triage, management and referral procedures needed for the COVID-19 response. The current study findings revealed that most of the respondents were not competent to implement both standard contact and airborne precautions. In contrast, the study conducted by Ogboghodo et al. concluded that all the respondents in the study were aware of standard precautions [28]. In another study, done in a tertiary healthcare institution in Enugu State, 94.4% of respondents were aware of standard precautions [29]. Work experience and working hours per day at the facility were found to positively influence the ability of the respondents to implement standard precautions.

COVID-19 has no curative drugs, however, symptomatic management should be initiated. Several antiviral therapeutic options are available to reduce the risk for hospitalisation or death [30]. References to the current study findings, approximately half of the respondents were able to ration scarce lifesaving commodities.

The WHO recommended that identification of the infected individual is the first and essential step required in combating COVID-19. It also advised nations to allow citizens to get tested and put them in quarantine if they were infected [27]. In the current study, half of the respondents were able to report suspected cases of COVID-19. The study findings discovered that there was a lack of guidelines to facilitate the practice at the healthcare facilities. Routine screening for SARS-CoV-2 is deemed necessary as the major preventative measure for COVID-19 [31]. Healthcare facilities should establish designated areas for screening and triaging patients.

The facilities should have designated screening areas for temperature checks and history taking before entering the healthcare facility [32]. In this study, only 36.7% of the study respondents were able to implement protocols when screening for COVID-19 while 63.3% were incompetent. The study conducted by Muhammed et al. revealed the same results, where 23.9% of nurses knew the criteria for assessing persons under investigation for COVID-19 infection and few knew how to report potential COVID-19 cases, which could prompt an unexpected increase in undiagnosed cases, thereby increasing the burden of infection within the community [15]. However, the study conducted by Afulani et al. found that 80% of the respondents reported their facility had a protocol for screening for potential COVID-19 patients which led to earlier identification and diagnosis of the suspected cases [11].

In this study, less than half of the respondents (30.8%) agreed that they were able to implement protocols when managing COVID-19. Other studies conducted also found a low percentage of the respondents who were able to access the protocols for managing confirmed COVID-19 patients. Half of the healthcare providers in low-middle-income countries received updated care provision guidelines compared to 82% of those in high-income countries [11].

It was revealed in this study that more than half of the respondents could fairly maintain the qualities of a COVID-19 isolation room. Interestingly, the study conducted by Mu-

hammed et al., showed that the majority of the respondents were unable to outline the criteria for a COVID-19 isolation room. In their study, about 18% of participants were unaware of isolation room conditions and processes for potential COVID-19 patients, which could increase the risk of infection [15]. Time worked at the facility and work experience significantly and positively affected the ability to ensure the quality of the COVID-19 isolation room.

Contextualised guidelines are of great importance for preventing confusion when providing healthcare services. Applicability of the guidelines was a problem in some healthcare centres due to deprived substructure. In addition, a study conducted by Osaide et al., also indicated that 41.3% of nurses surveyed indicated that their healthcare centre did not provide a local protocol for the management of COVID-19 [18].

In contrast, other studies revealed that guidelines are readily available to nurses at the health facility and some guidelines were offered through social media [33, 34]. The study conducted by Desalegn et al., revealed that some people showed little trust in social media and other sources of communication such as television, newspapers, posters, and were not convinced or accepting of the facts disseminated to them initially [35]. It is probably for this reason that few people showed reluctance to follow the guidelines given through these channels and kept ignoring them.

The study findings pointed out that there was fair availability of informational materials about COVID-19 at the facility. According to WHO, informational material may be based on personal hygiene (hand washing, cleanliness and use of hand sanitizers), behavioural change (avoiding crowded places) and a healthy lifestyle. Healthcare facilities should use posters and flyers to disseminate information as a means of sensitizing the general public to the prevention and control of the COVID-19 pandemic. The information material may also aid in the education of the public regarding COVID-19 [27].

In the current study, the majority of the respondents (75.8%) agreed that they could educate the public about COVID-19. This is in line with the study conducted by Ashebir et al., where they found that 71% of nurses regularly were able to give health education about COVID-19 to their patients [36]. This study finding revealed that the practices of the participants were fair at the health facility. Indicating that the nurses' level of perspectives on managing COVID-19 in selected primary healthcare facilities was also fair.

5. Conclusions

A nurse's level of perspectives is paramount in the healthcare domain, which will make a significant difference in patient care. Training and education programs must be implemented to increase nurses' knowledge of the prevention, control, and management of COVID-19, a global public health issue. The level of perspectives of nurses in Lesotho was moderate regarding the management of COVID-19. Nursing practice is correlated with levels of education; hence,

nurses must be equipped with knowledge for a proper understanding of the care of their clients.

6. Limitations of the Study

The study was conducted in the district of Maseru and was cross-sectional. As a result, the study's findings will be limited to the study area and will not apply to the entire country.

Abbreviations

CHAL	Christian Health Association of Lesotho
PPE	Personal Protective Equipment
HCW	Health Care Workers
WHO	World Health Organisation

Acknowledgments

The author is grateful to all nurses who participated in this study.

Author Contributions

Letuka James Phiri: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft

Isabel Nyangu: Conceptualization, Supervision, Writing – review & editing

Mpho Shelile: Conceptualization, Supervision, Writing – review & editing

Funding

This work is not supported by any external funding.

Data Availability Statement

The data will be made available upon request for approval from the author and supervisors.

Conflicts of Interest

The authors declare no conflicts of interest.

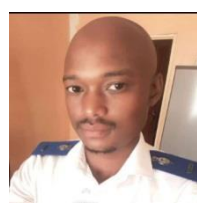
References

- [1] Nishio, A., 2021. COVID-19 is hitting poor countries the hardest. Here's how World Bank's IDA is stepping up support. World Bank Blogs. <https://blogs.worldbank.org/voices/covid-19-hitting-poor-countries-hardest-heres-how-world-banks-ida-stepping-support>

- [2] International Council of Nurses, 2020, June. More than 600 nurses die from COVID-19 worldwide. In ICN. Internet: Genève.
- [3] Makateng, D., 2020. Implications of Social Adaptation in the Kingdom of Lesotho during 2019-nCoV Pandemic. *Electronic Research Journal of Social Sciences and Humanities*, 2, pp. 165-183.
- [4] Munoz-Price, L. S., Bowdle, A., Johnston, B. L., Bearman, G., Camins, B. C., Dellinger, E. P., Geisz-Everson, M. A., Holzmman-Pazgal, G., Murthy, R., Pegues, D. and Prielipp, R. C., 2019. Infection prevention in the operating room anesthesia work area. *Infection Control & Hospital Epidemiology*, 40(1), pp. 1-17. <https://doi.org/10.1017/ice.2018.303>
- [5] Lai, X., Wang, M., Qin, C., Tan, L., Ran, L., Chen, D., Zhang, H., Shang, K., Xia, C., Wang, S. and Xu, S., 2020. Coronavirus disease 2019 (COVID-2019) infection among health care workers and implications for prevention measures in a tertiary hospital in Wuhan, China. *JAMA network open*, 3(5), pp. e209666-e209666. <https://doi.org/10.1001/jamanetworkopen.2020.9666>
- [6] Aloweni, F., Bouchoucha, S. L., Hutchinson, A., Ang, S. Y., Toh, H. X., Bte Suhari, N. A., Bte Sunari, R. N. and Lim, S. H., 2022. Health care workers' experience of personal protective equipment use and associated adverse effects during the COVID-19 pandemic response in Singapore. *Journal of Advanced Nursing*, 78(8), pp. 2383-2396. <https://doi.org/10.1111/jan.15164>
- [7] Sello L. 2021. Lesotho Officially In COVID-19 Third Wave: NACOSEC. Available at: <https://lestimes.com/lesotho-officially-incovid-third-wave-nacosec/> Accessed on; 30 July 2021
- [8] Thiam, S., Delamou, A., Camara, S., Carter, J., Lama, E. K., Ndiaye, B., Nyagero, J., Nduba, J. and Ngom, M., 2015. Challenges in controlling the Ebola outbreak in two prefectures in Guinea: why did communities continue to resist?. *The Pan African Medical Journal*, 22(Suppl 1). <https://doi.org/10.11694/pamj.suppl.2015.22.1.6626> PMID: 26740850; PMCID: PMC4695515.
- [9] Belfroid, E., van Steenberg, J., Timen, A., Ellerbroek, P., Huis, A. and Hulscher, M., 2018. Preparedness and the importance of meeting the needs of healthcare workers: a qualitative study on Ebola. *Journal of Hospital Infection*, 98(2), pp. 212-218. <https://doi.org/10.1016/j.jhin.2017.07.001>
- [10] Lamunu, M., Olu, O. O., Bangura, J., Yoti, Z., Samba, T. T., Kargbo, D. K., Dfae, F. M., Raja, M. A., Sempira, N., Ivan, M. L. and Sing, A., 2017. Epidemiology of Ebola virus disease in the Western area region of Sierra Leone, 2014–2015. *Frontiers in public health*, 5, p. 33. <https://doi.org/10.3389/fpubh.2017.00033>
- [11] Afulani, P. A., Gyamerah, A. O., Aborigo, R., Nutor, J. J., Malechi, H., Laar, A., Sterling, M. and Awoonor-Williams, J. K., 2020. Perceived preparedness to respond to the COVID-19 pandemic: a study with healthcare workers in Ghana. *MedRxiv*, pp. 2020-07. <https://doi.org/10.1101/2020.07.10.20151142>
- [12] Sanders, J. E., Chakare, T., Mapota-Masoabi, L., Ranyali, M., Ramokhele, M. M., Rozario, A. M. and McCollum, E. D., 2021. National hospital readiness for COVID-19 in Lesotho: evidence for oxygen ecosystem strengthening. *Public Health Action*, 11(4), pp. 180-185. <https://doi.org/10.5588/pha.21.0067>
- [13] Liu, Q., Luo, D., Haase, J. E., Guo, Q., Wang, X. Q., Liu, S., Xia, L., Liu, Z., Yang, J. and Yang, B. X., 2020. The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *The Lancet Global Health*, 8(6), pp. e 790-e 798. [https://doi.org/10.1016/S2214-109X\(20\)30204-7](https://doi.org/10.1016/S2214-109X(20)30204-7)
- [14] Sharififar, S., Farahani, R. H., Khoshvaghti, A. and Marzaleh, M. A., 2022. Designing and validation of the nurses' preparedness to response to COVID-19 questionnaire in Iran. *Disaster Medicine and Public Health Preparedness*, 16(6), pp. 2595-2601. <https://doi.org/https://doi.org/10.1017/dmp.2021.233>
- [15] Elhadi, M., Msherghi, A., Alkeelani, M., Zorgani, A., Zaid, A., Alsuyihili, A., Buzreg, A., Ahmed, H., Elhadi, A., Khaled, A. and Boughididah, T., 2020. Assessment of healthcare workers' levels of preparedness and awareness regarding COVID-19 infection in low-resource settings. *The American journal of tropical medicine and hygiene*, 103(2), p. 828. <https://doi.org/10.4269/ajtmh.20-0330> Epub 2020 Jun 18. PMID: 32563273; PMCID: PMC7410457.
- [16] Alreshidi, N. M., Haridi, H. K., Alaseeri, R., Garcia, M., Gaspar, F. and Alrashidi, L. Assessing Healthcare Workers' Knowledge, Emotions and Perceived Institutional Preparedness about Covid-19 Pandemic at Saudi Hospitals in the Early Phase of the Pandemic. *Journal of Public Health Research*. 2020; 9(4). <https://doi.org/10.4081/jphr.2020.1936>
- [17] Chanie, E. S., Feleke, D. G., Fetene, S., Tigabu, A., Asnakew, S., Tiruneh, T., Mekie, M., Ayehu, G. W. and Bayih, W. A., 2021. Level of preparedness for COVID-19 and its associated factors among frontline healthcare providers in South Gondar Public Hospitals, Northwest Ethiopia, 2020: a multicenter cross-sectional study. *BioMed Research International*, 2021. <https://doi.org/10.1155/2021/6627430>
- [18] Osaïd, A., Alghoul, H., Alkhateeb, Z., Hamdan, A., Albarqouni, L. & Saini, K. 2021. Healthcare workers preparedness for COVID-19 pandemic in the occupied Palestinian territory: a cross-sectional survey. *Alser et al. BMC Health Services Research* (2021) 21: 766 <https://doi.org/10.1186/s12913-021-06804-7>
- [19] Ssebuufu, R., Sikakulya, F. K., Mambo, S. B., Wasingya, L., Nganza, S. K., Ibrahim, B. and Kyamanywa, P., 2020. Knowledge, Attitude, and Self-Reported Practice Toward Measures for Prevention of the Spread of COVID-19 Among Ugandans: A Nationwide Online Cross-Sectional Survey. *Frontiers in public health*, 8, p. 618731. <https://doi.org/10.3389/fpubh.2020.618731>
- [20] Jemal, B., Aweke, Z., Mola, S., Hailu, S., Abiy, S., Dendir, G., Tilahun, A., Tesfaye, B., Asichale, A., Neme, D. and Regasa, T., 2021. Knowledge, attitude, and practice of healthcare workers toward COVID-19 and its prevention in Ethiopia: A multicenter study. *SAGE Open Medicine*, 9, p. 20503121211034389. <https://doi.org/10.1177/20503121211034389>

- [21] Umeta, B., Mulugeta, T., Mamo, G., Alemu, S., Berhanu, N., Milkessa, G., Mengistu, B. and Melaku, T., 2022. An analysis of COVID-19 information sources. *Journal of Pharmaceutical Policy and Practice*, 15 (1), p. 49. <https://doi.org/10.1186/s40545-022-00446-8>
- [22] Albahri, A. H., Alnaqbi, S. A., Alnaqbi, S. A., Alshaali, A. O. and Shahdoor, S. M., 2021. Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in primary healthcare centers in Dubai: a cross-sectional survey, 2020. *Frontiers in Public Health*, 9, p. 617679. <https://doi.org/10.3389/fpubh.2021.617679>
- [23] Leung, K., Wu, J. T., Liu, D. and Leung, G. M., 2020. First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment. *The Lancet*, 395 (10233), pp. 1382-1393. [https://doi.org/10.1016/S0140-6736\(20\)30746-7](https://doi.org/10.1016/S0140-6736(20)30746-7)
- [24] Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K. and Kaushal, V., 2020. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian journal of psychiatry*, 51, p. 102083. <https://doi.org/10.1016/j.ajp.2020.102083>
- [25] Abdulraheem, I. S., Amodu, M. O., Saka, M. J., Bolarinwa, O. A. and Uthman, M. M. B., 2012. Knowledge, awareness and compliance with standard precautions among health workers in north eastern Nigeria. *J Community Med Health Edu*, 2 (3), pp. 1-5. <https://doi.org/10.4172/jcmhe.1000131>
- [26] Ikhlaiq, A., Hunniya, B. E., Bashir, I. and Ijaz, F., 2020. Awareness and attitude of undergraduate medical students towards 2019-novel corona virus. *Pakistan Journal of Medical Sciences*, 36 (COVID 19-S 4), p. S 32. <https://doi.org/10.12669/pjms.36.COVID19-S4.2636>
- [27] World Health Organization. Infection prevention and control health-care facility response for COVID-19: A module from the suite of health service capacity assessments in the context of the COVID-19 pandemic: interim guidance, 20 October 2020. No. WHO/2019-nCoV/HCF_assessment/IPC/2020.1. World Health Organization, 2020.
- [28] Ogboghodo, E. O., Osaigbovo, I. I., Adio, F. B., Uwugiaren, E. I., Nwaogwugwu, C. J., Obaseki, D. E. and Oko-oboh, G. A., 2021. Healthcare Workers' preparedness to tackle COVID-19: A Study on Knowledge and Compliance with Standard Precautions in a Tertiary Hospital in Southern Nigeria. *Journal of Community Medicine and Primary Health Care*, 33 (1), pp. 50-63. <https://doi.org/10.4314/jcmphc.v33i1.5>
- [29] Arinze-Onyia, S. U., Ndu, A. C., Aguwa, E. N., Modebe, I. and Nwamoh, U. N., 2018. Knowledge and practice of standard precautions by health-care workers in a tertiary health institution in Enugu, Nigeria. *Nigerian journal of clinical practice*, 21 (2), pp. 149-155. https://doi.org/10.4103/njcp.njcp_69_17
- [30] Szeto, M. D., Maghfour, J., Sivesind, T. E., Anderson, J., Olayinka, J. T., Mamo, A., Runion, T. M. and Dellavalle, R. P., 2021. Interferon and toll-like receptor 7 response in COVID-19: Implications of topical imiquimod for prophylaxis and treatment. *Dermatology*, 237 (6), pp. 847-856. <https://doi.org/10.1159/000518471>
- [31] Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., Wang, B., Xiang, H., Cheng, Z., Xiong, Y. and Zhao, Y., 2020. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *Jama*, 323 (11), pp. 1061-1069. <https://doi.org/10.1001/jama.2020.1585>
- [32] Al Baalharith, I. M. and Pappiya, E. M., 2021. Nurses' preparedness and response to COVID-19. *International Journal of Africa Nursing Sciences*, 14, p.100302. <https://doi.org/10.1016/j.ijans.2021.100302>
- [33] Williams, G., Gunn, A. and Sweeny, A., 2021. Nursing in the time of COVID-19: exploring nurse preparedness early in a global pandemic. *The Australian Journal of Advanced Nursing*, 38 (3), pp. 59-65. <https://doi.org/10.3316/informit.278277758177535>
- [34] Crowley, T., Kitshoff, D., de Lange-Cloete, F., Baron, J., De Lange, S., Young, C., Esterhuizen, T. and Couper, I., 2021. Reorganisation of primary care services during COVID-19 in the Western Cape, South Africa: Preparedness of primary care nurses. *South African Family Practice*, 63 (4). <https://doi.org/10.4102/safp.v63i1.5358>
- [35] Desalegn, Z., Deyessa, N., Tekla, B., Shiferaw, W., Yohannes, M., Hailemariam, D., Addissie, A., Abagero, A., Kaba, M., Abebe, W. and Abrha, A., 2021. Evaluation of COVID-19 related knowledge and preparedness in health professionals at selected health facilities in a resource-limited setting in Addis Ababa, Ethiopia. *PLoS One*, 16 (2), p. e 0244050. <https://doi.org/10.1371/journal.pone.0244050>
- [36] Ashebir, W., Yimer, B., Alle, A., Teshome, M., Tekla, Y. and Wolde, A., 2022. Knowledge, attitude, practice, and factors associated with prevention practice towards COVID-19 among healthcare providers in Amhara region, northern Ethiopia: A multicenter cross-sectional study. *PLOS Global Public Health*, 2 (4), p. e 0000171. <https://doi.org/10.1371/journal.pgph.0000171>

Biography



Letuka James Phiri holds a Masters of Nursing Science (Advanced Community Health Nursing) Minor; education. He is currently employed at the National University of Lesotho, Faculty of Health Sciences at the Department of Nursing and Midwifery, as a Lecturer. Other responsibilities; National Health Training Centre Examination moderator, Institute of the Institute of Extra Mural Studies; Introduction to Epidemiology & Biostatistics module internal moderator and lecturer. His research interests include home-based care, Sexual and Reproductive Health and trends in communicable diseases.