



KNOWLEDGE, ATTITUDE AND SKILLS OF NURSES/MIDWIVES RESPONSE TO COVID-19 PANDEMIC IN PUBLIC HEALTH FACILITIES IN SELECTED COUNTIES IN KENYA

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ABSTRACT: *Background: Nurses and midwives are the backbone in the provision of health care globally and in Kenya. The COVID-19 pandemic led to several negative impacts in the health sector. Knowledge and skills in the prevention of COVID-19 are key in the control of infection. Objective: This study sought to establish the knowledge, attitude and skills of nurses/midwives in response to the COVID-19 pandemic. Methodology: A quantitative descriptive cross-sectional study was carried out among 331 nurses/midwives in Kenya. The counties were purposively selected; cluster sampling was employed to proportionate the sample size and simple random sampling was used to select the facilities and the respondents per facility. Data was analysed using STATA 23 and presented in the form of figures, tables and narrative texts. Ethical approval was sought from Kenyatta National Hospital – University of Nairobi Ethics and Review Committee. Results: Most respondents were aged between 21 and 30 years, the majority being females. Information was mostly received from government sources. Generally, the nurses and midwives were knowledgeable about COVID-19, with 94.1% agreeing that wearing PPEs appropriately could prevent infection and 91.8% agreeing that isolation and management of an infected patient is the recommended treatment. Only 37.7% felt confident in managing a COVID-19 patient. On infection-prevention practices, 86.1% washed their hands before and after coming into contact with a patient and 52.4% of them spent the shortest time possible in isolation rooms with COVID-19 patients. Conclusion: Nurses and midwives were knowledgeable and had positive attitudes towards COVID-19 prevention practices; however, there were poor practices related to prevention of COVID-19. There is a need to enhance infection-prevention practices to protect nurses/midwives during pandemics.*

KEYWORDS: Nurses, Knowledge, Attitude, Practice, COVID-19.



INTRODUCTION

Since December 2019, the world has been thrown into a pandemic that has left many negative impacts. Coronavirus disease (COVID-19) is a highly contagious disease that is undergoing so many mutations, evidenced by the several waves experienced in different parts of the world. This pandemic was first reported in China in December 2019. One of the sectors that is heavily affected was the health sector, where there has been strain on the human and other resources. Nurses, being the frontline health care workers, were certainly most affected. The WHO declared COVID-19 a pandemic in January 2020. Following the onset of the pandemic, the health institutions began to be overwhelmed with the rising number of cases. At the time, there was little information about the novel virus; however, infection prevention was a key principle in the management of the pandemic.

Nurses and midwives play a critical role in the management and control of infections (Tadesse et al., 2020). Knowledge, practice and attitude of nurses/midwives greatly affect the progression of COVID-19 (Wen et al., 2021). Nurses and midwives have good knowledge, positive attitudes and practice on COVID-19; however, they feel health institutions are ill-prepared to handle the pandemic (Kanu et al., 2021). Training of health workers on prevention and protective measures is necessary (Limbu et al., 2020). A study in China noted that nurses acquired knowledge through online videos, training organised by the institutions, websites, communication with colleagues and radios (Wen et al., 2021).

Knowledge of COVID-19 has a great influence on how one behaves towards prevention of infection. In Wuhan, it was established that nurses had insufficient knowledge and that gaps existed in attitude and practice (Jin et al., 2020). In Nigeria, a study established that there was poor knowledge, negative attitude and inappropriate practices on COVID-19 (Ejeh et al., 2020). It has been established that a low level of knowledge and a negative attitude towards COVID-19 are directly linked to late diagnosis, poor adherence to infection control principles, poor practice and a more rapid spread of the disease (Hesaraki et al., 2020). Health education programs have been found to be effective in improving knowledge and attitude and enhancing appropriate practices (Provenzano et al., 2020). Good knowledge is associated with favourable practices (AbdHasan, 2021).

Since the onset of the pandemic, several learning forums have been organised to inform, educate and enlighten the healthcare workers on the novel virus. These forums include workshops, seminars and online webinars. These forums have been found to be educative and have been used to update healthcare workers on any upcoming information regarding the virus.

Nurses/midwives globally, being the frontline workers, were highly exposed to infection, especially in cases where there are challenges affecting infection prevention and control measures. This exposure led to nurses/midwives having psychological disturbances (Tadesse et al., 2020). A study done in China observed that the nurses working in provincial hospitals scored more in practice as compared to those working in the county hospitals (Wen et al., 2021). In Chad, the majority of the population had knowledge of prevention measures but had concerns about being infected with the virus (Dzomo et al., 2021). In a tertiary hospital in Nigeria, despite having good knowledge, the health workers lacked motivation towards the management of COVID-19 owing to fear of self-infection and lack of adequate resources (Egbi et al., 2020).



The source of information for health workers affects their level of knowledge; they may thus be informed (Basnet, 2020). Healthcare providers need continuous information on COVID-19. Healthcare workers have been found to be a source of nosocomial infection and community transmission (Ejeh et al., 2020).

The advent of COVID-19 had an impact on individuals, families, communities and governments. Nurses are an essential component in medical care and their knowledge, attitude and practice have a direct impact on health outcomes. Understanding nurses'/midwives' knowledge, attitude and practice would help in predicting their behaviour and approach towards the response to COVID-19. Adequate knowledge among health workers is part of the preparations in readiness to handle the emergencies, thus enabling timeliness in managing the pandemic. The objective was to establish the knowledge, attitude and practice of nurses/midwives in response to the COVID-19 pandemic in Kenya.

MATERIALS AND METHODS

This was a descriptive cross-sectional study employing quantitative methods by use of a self-administered online questionnaire. Once the baseline survey was completed, data was analysed and the intervention, which was the nurse/midwife-led webinars implemented. An evaluation was done to assess the uptake of knowledge and response towards the COVID-19 pandemic. This study was carried out among nurses/midwives in selected counties with the highest COVID-19 prevalence in Kenya. These counties were Nairobi, Mombasa, Kiambu, Nakuru and Uasin Gishu. The study population were nurses/midwives in selected counties with the highest COVID-19 prevalence in Kenya.

The sample size was 331 respondents. Multistage sampling was used to select the respondents of the study. Purposive sampling was employed to select the counties with the highest prevalence as per the Ministry of Health report in April 2021. These counties were singled out as the hotspot counties and were ranked with the highest prevalence during that time. Descriptive statistics were used to describe the socio-demographic characteristics of the sample population. Data was analysed using an interval measurement scale. Modes, medians, and frequencies were used to analyse the Likert scales. Data was presented in the form of figures and tables. Knowledge score was used to assess the level of knowledge. Knowledge level was categorised as knowledgeable or not knowledgeable. The section on knowledge has nine items. A respondent was classified as knowledgeable if they scored five out of the nine items correctly.

Ethical approval was sought from Kenyatta National Hospital (KNH) – University of Nairobi (UoN). Permission to carry out the study was sought from the National Commission of Science, Technology and Innovation (NACOSTI).



RESULTS

Demographic Characteristics

Most of the interviewed respondents (37.7%) were aged between 21 and 30 years, 29.3% were between 31 and 40 years, 20.5% between 41 and 50 years, 11.4% between 51 and 60 years, 0.7% between 11 and 20 years, while 0.4% of them were aged between 60 and 70 years. This implies that most of the nurses and midwives in Kenya are aged between 21 and 30 years. Most of the respondents were female (67.8%), while 31.9% of them are male. Most of the respondents had attained a Diploma (66.7%); 21.2% had attained a Degree, 8.4% a Certificate, 1.5% a Master's degree, and 0.7% a Higher Diploma, while 0.7% had other qualifications. This means that most Kenyan nurses and midwives have attained a Diploma. Majority of the interviewed respondents were Christian (93%), with only 7% of them being Muslim. Majority of the respondents in this study work in County hospitals (52.7%). 26% work in Sub- County hospitals, 10.3% in health centres, 4% in national hospitals, 3.3% in private hospitals, and 1.1% in dispensaries, while 0.7% of them work in COVID-19 centres. Therefore, the majority of the Kenyan nurses and midwives work in County hospitals.

Level of Knowledge of Nurses/Midwives in Response to COVID-19 Pandemic in Kenya

Sources of information on COVID-19

The interviewed nurses and midwives were asked to indicate their sources of information on COVID-19. Table 4.2 presents their responses.

Table 1: Sources of COVID-19 information

Source	Count	Percent
Official health organisation sites, e.g., WHO, Africa CDC	182	66.7
Official government sites and media, e.g., Ministry of Health Kenya	219	80.2
News media, e.g., TVs, radios, Magazines, Newspapers Social	215	78.8
Social media, e.g., WhatsApp, Facebook, Twitter, Instagram, Journals	184	67.4
Webinars	107	39.2

From the analysis, the majority of the nurses and midwives learnt about COVID-19 through official government websites (80.2%); 78.8% of them got their information from news media, 67.4% from social media, and 66.7% from official health organisation sites, while 29.2% of them got the information from webinars.



Clinical Symptoms of COVID-19

The nurses and midwives mentioned several symptoms of COVID-19 as indicated in table 2.

Table 2: Clinical Symptoms of COVID-19

Clinical symptoms	Count	Percent
Fever, Headache	270	98.9
Myalgia (muscle pain)	221	81.0
Smell disturbance	252	92.3
Sore throat	253	92.7
Runny nose	221	81.0
Sneezing	209	76.6
Diarrhoea, Cough, Confusion	142	52.0

Most nurses therefore felt that fever and headache were the most common clinical symptoms of Covid-19 (98.9%); 92.7% indicated sore throat, 92.3% stated smell disturbance, 81% stated myalgia, 81% stated runny nose, and 76.6% stated sneezing, while 52% indicated diarrhoea, cough and confusion.

The nurses and midwives were presented with several statements on COVID-19, and were asked to indicate whether the statements were true or false. They also had an option of stating whether they did not know about the information. The findings are as presented in table 4.4.

Table 3: Other Measures of Knowledge of COVID-19

Measures of knowledge	False	True	I don't know
There is currently a vaccine for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	4.0	94.1	0.7
Severe Cases of COVID-19 are only on experienced with the elderly, those with chronic illnesses, and the obese.	68.9	30.0	0.7
COVID-19 can only be transmitted when one has severe symptoms	87.9	11.0	0.7
Wearing PPEs appropriately can prevent infection.	4.0	94.1	1.5
Children and the youth cannot get infected.	92.7	6.2	0.7
To prevent the infection by COVID-19, we should observe social distancing, avoid shaking hands and wear masks appropriately.	1.8	97.8	-
Isolation and management of an infected patient is the recommended treatment.	5.5	91.9	2.2

Generally, the nurses and midwives were knowledgeable about COVID-19. 94.1% of them stated that there is currently a vaccine for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection. 68.9% disagreed with the assumption that severe cases of COVID-19 are only experienced with the elderly, those with chronic illnesses, and the obese. 87.9% disagreed with the assumption that COVID-19 can only be transmitted when one has severe symptoms. 94.1% agreed that wearing PPEs appropriately can prevent infection. 97.8% agreed that to prevent the infection by COVID-19, we should observe social distancing, avoid shaking hands and wear masks appropriately. Lastly, 91.8% agreed that isolation and management of an infected patient is the recommended treatment.



Further, the nurses and midwives stated that the average observation period of those infected with COVID-19 is approximately 14 days (Mean = 13.15, SD = 2.517). The minimum number of days indicated was 5, with a maximum of 28 days.

Attitude of Nurses and Midwives towards COVID-19 in Kenya

The nurses and midwives were presented with several statements to measure their attitudes towards COVID-19 in Kenya. The findings are as presented on table 4.5.

Key: SA – Strongly agree, A – Agree, N – Neutral, D – Disagree, SD – Strongly disagree

Table 4: Measures of Attitude towards to COVID-19

Measures of attitude	SA	A	N	D	SD
In Africa we cannot easily contract COVID-19 disease.	0.4	7.7	2.6	13.6	74.7
Wearing PPEs that are well-fitting is effective in preventing COVID-19.	59.0	30.0	2.2	2.2	4.0
Social Distancing can prevent you from getting COVID-19.	58.2	31.5	2.6	3.7	2.2
I can manage a symptomatic COVID-19 Patient.	37.7	37.4	11.7	7.0	4.4
Measures in place by WHO and the Ministry of Health will help in containment of the virus.	62.3	25.6	4.0	-	4.4

The nurses and midwives generally had a positive attitude and beliefs towards handling COVID-19. Majority of them (74.7%) strongly disagreed with the assumption that 'in Africa we cannot easily contract COVID-19 disease'. Most of them (59%) strongly agreed that wearing PPEs that are well-fitting is effective in preventing COVID-19. Further, most of the nurses and midwives (58.2%) strongly agreed that social distancing could prevent them from getting COVID-19. 37.7% of the nurses and midwives strongly agreed that they can manage symptomatic COVID-19 patients. Further, 62.3% strongly agreed that measures put in place by WHO and the Ministry of Health will help in the containment of the virus.

Nurses and Midwives' Practices in the Era of COVID-19 in Kenya

The nurses and midwives were presented with several statements to measure their practices in the era of COVID-19 in Kenya. The findings are as presented on table 4.6.

Table 5: Practices in the era of COVID-19

Practices	Often	Occasional	Never
I have been avoiding large crowds and social gatherings.	68.9	26.7	3.3
I wear PPE when in contact with patients.	69.6	22.3	4.4
I shake hands with my family members only.	11.4	30.8	55.3
I ensure social distancing at my workstation.	64.1	29.3	4.0
I sanitise or wash my hands before and after coming into contact with a patient.	86.1	11.4	0.7
I seek relevant information on COVID-19 from official international health organisations and the Ministry of Health in Kenya.	63.7	29.3	0.4
I spent the shortest time possible in the isolation room with a COVID-19 patient.	52.4	23.8	18.7



From the analysis of nurses' and midwives' practices in the era of COVID-19, it is evident that they generally have good practices. From the results in table 4.6, most of the nurses and midwives (68.9%) have been avoiding large crowds and social gatherings, 69.6% wear PPEs when in contact with patients, 55.3% do not shake hands even with their family members, and 64.1% ensure social distancing at their work stations. In addition, 86.1% of them sanitise or wash their hands before and after coming into contact with a patient, and 63.7% of them seek relevant information on COVID-19 from official international health organisations and the Ministry of Health in Kenya. Lastly, 52.4% of them spend the shortest time possible in isolation rooms with COVID-19 patients.

DISCUSSION

The age of nurses is critical in enhancing their skills and provision of nursing care. Most of the respondents were aged between 21 and 30 years old. This could be attributed to the fact that young nurses are likely to be posted to work in the COVID centres since they have a lesser risk of acquiring the infection, as most of them do not have pre-existing conditions, which could be there in the older nurses. These findings compare to a study in Indonesia which established that most nurses who were in the COVID-19 team were aged 21–30 years; however, those who were regular nurses were older (Marthoenis & Maskur, 2021).

Regarding the gender, most of the nurses were females. This could be attributed to a higher enrolment of females in training schools that increases the proportion of female nurses. These findings are similar to those of Indonesian, Palestinian territory and Iranian studies (Alirezaei et al., 2022; Marthoenis & Maskur, 2021; Shawahna, 2021) but differ from findings from a Ugandan study (Olum et al., 2020).

Most of the respondents were diploma holders, with only 2.2% being holders of master's degrees and higher diplomas. This could be attributed to the high number of diploma training institutions and also to the fact that, at the high school level, a majority of the population do not achieve higher grades to join the University directly for a Bachelor's programme. These findings are similar to those of a study carried out in Indonesia (Marthoenis & Maskur, 2021).

Most of the respondents were Christians, with only 7% Muslims. This could be explained by the fact that in Kenya, most people are Christians. Religion is related to COVID-19 prevention practices since there are some religious practices that could help an individual maintain or break the rules of prevention.

A greater majority of the nurses and midwives received information on COVID-19 from the official government sites, followed by the news media which included radios and televisions. During the COVID-19 pandemic, the government kept updating the information on its website and media since the disease was new to everyone; thus, there was very little information. In addition, the media stations were updating regularly on the status of the pandemic in the country. These findings differ from a study in Saudi Arabia, where the main source of information was social information with WHO and the Ministry of Health contributing 36% (Alsharif, 2021).

The most cited clinical symptoms were fever and headache. This could be attributed to observations made of most patients visiting the health facility. In the earlier months of the



COVID-19 outbreak, headache and fever were key symptoms, which prompted the community health practice of checking fever at every entry point to ascertain that the person was not infected. This contributed to fear and stigmatisation of anyone who might have had the symptoms and could have predisposed patients to misdiagnosis of other ailments.

The nurses were knowledgeable on most aspects of COVID-19. This being a new condition at the time, nurses and midwives could have been eager to find more information about the same. Similar findings were shared by a Saudi Arabian study (Alsharif, 2021) and in Nigeria (Anozie et al., 2020). However, in Ethiopia, there were low levels of knowledge (Akalu et al., 2020).

Less than half of the nurses and midwives felt confident in managing an asymptomatic COVID-19 patient. High level of knowledge is linked to a positive attitude (Gunarti et al., 2021); however, there is a perception of risk of infection despite being knowledgeable (Abdulle et al., 2022). In Indonesia, although nurses were knowledgeable and had positive attitudes towards the prevention of COVID-19, they were worried about infection (Marthoenis & Maskur, 2021). The present study established that nurses and midwives feared spending a lot of time in the isolation room. This was linked to the risk of infection, as established also in other studies (El-Monshed et al., 2021). A study carried out in Nigeria established that there was a negative attitude towards COVID-19 practices (Anozie et al., 2020). Despite the positive attitude on COVID-19 prevention practices, health workers still need education on COVID-19 (Sharma et al., 2020).

The findings of this study indicated that the nurses and midwives believed that those who were at high risk of COVID-19-related mortalities were the elderly and those who had chronic conditions. COVID-19-related mortalities were reported even among the young and those without chronic conditions. A study on the care and protection for healthcareworkers in Africa established that COVID-19-related mortalities among the health workers may be higher owing to inadequate protection, limited critical care beds and challenges in transportation of victims to facilities where they could access care.

The nurses and midwives did not strictly observe the COVID-19 prevention rules. This could be linked to the environment or lack of clear understanding of the guidelines. Similarly, in Turkey, a study of oncology nurses established that 29.1% of them did not follow guidelines (Semerci et al., 2021), as was also seen in a Nigerian study (Ejeh et al., 2020). High level of knowledge and a positive attitude were not necessarily associated with good prevention practices (Yesse et al., 2021). Education level, training on COVID-19 and years of experience were associated with good practice in prevention of COVID-19 (Yesse et al., 2021). However, in Nigeria, the practice of COVID-19 prevention practices was found to be poor (Anozie et al., 2020).

In the present study, nurses and midwives agreed that the world health organization (WHO) had put in adequate measures to prevent them from getting infected. This was linked to the continuous updates from WHO to enhance their knowledge and distribution of PPEs, which at the time were scarce. To ensure the healthcareworkers, who were the frontliners in managing COVID-19 were protected, the WHO became an important driver in promoting, prioritising and ensuring equitable distribution of personal protective equipment to enhance access (WHO, 2021).



CONCLUSION

Most of the nurses and midwives were knowledgeable on the prevention of COVID-19; however, only a few felt confident in managing a COVID-19 patient. Despite being knowledgeable, the nurses and midwives did not strictly observe COVID-19 prevention measures. Nurses and midwives need to be more empowered to build their confidence in managing COVID-19 patients. There is a need also to strengthen COVID-19 prevention measures to enable the nurses and midwives to adhere to them.

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