Biomedical Communication

Knowledge, Skill and Attitude of Nurses on the COVID-19 Pandemic Crisis in Jazan, Saudi Arabia: A Quantitative Cross-Sectional Study

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ABSTRACT

Coronavirus (COVID-19) was identified in the Chinese city of Wuhan in 2019. COVID-19 is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and it is now recognized that SARS COV-2 may infect and spread among humans. During the pandemic situation, nurses and health care workers (HCWs) played a vital role in handling the infected patients and this study was carried out in Jazan city of Saudi Arabia among the nurses. The purpose of this study was to document nurses' knowledge, skills, challenges, and information on the COVID-19. In this questionnaire-based study, we have enrolled 296 nurses based on inclusion and exclusion criteria. The 296 nurses involved in this study has shared their knowledge, experience, skills and challenges in handling the infected patients with COVID-19. Initially, 34.1% of nurses was expecting COVID-19 virus will be controlled by vaccine. The majority of nurses, 54.7%, were convinced that antibiotics could control the illness. In this study results, 97% of nurses were aware of COVID-19 symptoms such as fever, cough, sore throat, and shortness of breath. Around 96.3% of the nurses were aware of the risk of chronic diseases in the elderly population, which may be at risk of COVID-19 infection. The 78.7% nurses believed that mask can protect from the infecting from COVID-19 and ~94% of the nurses believed that avoiding of gatherings at public places is the best method to control the virus. The majority of the 97% of nurses believed that isolation is the best method to control the COVID-19 virus in an infected person. Nurses played a critical role in the treatment of COVID 19 infected patients in Saudi Arabia, as nurses and HCWs were at risk of becoming asymptomatic carriers due to their role in disease transmission. This study recommends the nurses, HCWs and all the residents of Saudi Arabia to take the vaccine to prevent the spread of COVID-19 as new strains are developing in the global population

KEY WORDS: COVID-19, EXPERIENCE, JAZAN CITY, KNOWLEDGE, NURSES.

INTRODUCTION

The story of coronavirus (COVID-19) has started in the last month of December (2019) from Wuhan market in China. This infectious disease spread through animal to human from China to the rest of the world. The World Health Organization (WHO) has declared COVID-19 a pandemic, as well as a novel coronavirus known as SARS-CoV-2, which is a virus with a similar pattern to the SARS-CoV virus that infected people in China in 2003 (Meng et al. 2020). COVID-19 spreads primarily over the snows or coughs through saliva droplets or nose discharge. Studies have shown that there are no effective treatments for this disease (Hafeez et al. 2020). SARS-CoV-2 is the third coronavirus to be transmitted worldwide over the past two decades, causing serious disease in humans. Looking under an electron microscope, coronaviruses range in diameter from 60 nm to 140 nm and have spiky projections on their surface, and are called crown-like viruses. The most common coronaviruses in clinical practice are 229E, OC43, NL63, and HKU1, which usually cause common cold symptoms in immunocompetent people (Singhal 2020; Wiersinga et al. 2020).

COVID-19 symptoms include a dry cough, headache, diarrhea, myalgia, and vomiting. People who have multiple

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congenital disorders are more vulnerable to severe infections (Farasani 2020). SARS-CoV-2 can be distributed by direct and indirect means. The cause of airborne infections can also be personal protective equipment. COVID-19 can occur when a person has a SARS-CoV-2 contaminated surface and the hands are then directly in contact with mucous membranes, including eyes, nose and mouth. Therefore, enough hand washing is recommended with soap and water or hand sanitizers (Lotfi et al. 2020). Countries have put in place unprecedented steps to avoid the spread of the SARS-CoV-2 virus, from school closure to large lockdowns. The greater uncertainty in epidemiological monitoring and disease development are making international comparisons more complex. Furthermore, though continued communication took place around mid-February in most of Europe, the fact that the virus was introduced at various locations at very different times made global comparisons difficult (Ragonnet-Cronin et al. 2021).

The European Medicines Agency and the Italian Medicines Agency had approved four vaccines as of March 13, 2021, including Pfizer, Moderna, AstraZeneca (Oxford), and J&J (Ad26.COV2.S). After 28 days of vaccination with a safety zone the efficacy rate has been reported as 95%, 94%, 81.3% and 86% respectively (Giordano et al. 2021). During the COVID-19 pandemic crisis, health care staff, especially nurses, played a pivotal role in dealing with COVID-19 infected patients. Basically, for the nurses, in 24-hours and seven consecutive days of week, the nurses had the highest levels of workplace stress and anxiety. Empirical evidence of COVID-19 and other outbreaks of infectious respiratory disease indicates high concern among nurses about their personal and family wellbeing in the face of close interaction and tension in balance with their moral responsibilities to continue providing healthcare a potentially fatal virus (Maben and Bridges 2020; Giordano et al. 2021).

Nurses working in primary health care (PHC) centers outside of hospitals play different roles around the world. PHC practitioners play an important role in community education through managing public response and psychological sequelae to COVID-19 (Halcomb et al. 2020). Al Thobaity et al. (2020) reveal that nurses have a pivotal role in fighting COVID-19 since they are always on the frontline, in addition to offering holistic care for different patients daily, as well as during disasters. The nurses had opted the more specific roles in managing this illness include triaging patients, noticing suspected COVID-19 cases and dealing with them cautiously, offering critical services during an emergency, de-contaminating surfaces, coordinating with colleagues and other health practitioners, contributing to the expansion of care services, in addition to handling patients' relatives. Considering these critical roles that nurses play during a pandemic, documented studies stated that nurses should be equipped with key skills and knowledge to manage the crisis (Thobaity and Alshammari 2020; Liu et al. 2020; Kasnakova and Ivanova 2021). Limited studies have been documented regarding the role of nurses during the COVID-19 crisis and the current study was carried out in Jazan region in the nurses about their knowledge, skills, challenges and information about the COVID-19.

MATERIAL AND METHODS

The study will use a quantitative cross-sectional design. The chosen design is the most common design used in health-based studies. According to Setia (2021), it can also be referred to as descriptive research since it is used to describe certain characteristics in a community. The design is appropriate for the proposed investigation because it does not require a long duration of follow-ups. Moreover, the design will allow the researcher to measure prevalence rates for each factor in the research (Bloomfield and Fisher 2019; Setia and Verma 2021).

The total number of nurses in the two hospitals was 1,100. It was impossible to collect data from all these nurses because it might require more resources and time. Thus, only a sample from the entire population was used in this study. Out of 1100 nurses, only 285 nurses were selected. Since the population size was 1,100, the margin error was 5%. Thus, the sample size was 285. A pilot sample was done to identify 10% of the total population, test the instruments, and ascertain validity and reliability. The study was done in Jazan, Saudi Arabia. This region in Saudi Arabia that stretches 30 km on the southern part of the red sea (Alanazi et al. 2017). Jazan region covers approximately 11,671km with a population of around 1,567,547 (Alhazmi et al. 2020). The region has several hospitals to cater to the growing needs of its population. However, the proposed study focused only on biggest two hospitals due to resources and constraints that do not allow large-scale research. One of the hospitals is known as King Fahad central hospital, and the other one is Prince Mohammed bin Nasser hospital.

The study population comprised of the registered nurses from King Fahad and Prince Mohammed bin Nasser hospitals. The nurses in Jazan have various needs, including training, resources, and motivation to manage and combat the Covid-19 pandemic. Only registered nurses working in the Jazan region were included in the proposed study. Moreover, only nurses who helped COVID-19 patients to manage the disease participated as they had vast experience. In this study, a non-probability sampling technique was used. Particularly, the investigation adopted a convenience sampling method. The technique was adopted because it was low cost (Etikan et al. 2016). Moreover, the subjects for the research were readily available for selection. In this study, only registered nurses were included to investigate the topic. Besides, nurses who directly dealt with COVID-19 patients were selected to participate. The study did not include other healthcare workers because of the differences in training, capacity, and regulatory mechanisms.

An online questionnaires and consent forms were sent to participants through their emails. Participants were allowed two weeks starting from 1-1-2021 to fill in and return the questionnaires. The descriptive statistic was used to analyse the data. Data management and analysis followed a systematic process that was presented in the following steps: Data coding, data entry, and descriptive analysis: in terms of frequency and percentage conversion of socio-demographic, knowledge, skills, and attitudes questions.

The data analysis was performed as per documented studies (Khan et al. 2019).

RESULTS AND DISCUSSION

In this study, based on inclusion and exclusion criteria, we opted for 296 participants. The mean age of the enrolled nurses was in the age range of 30.15±5.22 with the involvement of 4.1% of males and 95.9% of females. The majority of enrolled nurses (80.7%) had a bachelor's degree, followed by 17.2% with a diploma and 2.1% with a master's degree. More than 52% of nurses are working in the King Fahd Central Hospital and remaining 47.6% of them were employed at Prince Mohammed Bin Naser Hospitals in the Jazan region of Saudi Arabia. The complete basic details were documented in Table-1.

Table 1. Basic details of the participants

Basic details	n=296 (%)
Age	30.15±5.22
Gender	
Male:	12 (4.1%)
Female:	284 (95.9%)
Levels of Education	
Diploma	51 (17.2%)
Bachelor	239 (80.7%)
Master	06 (2.1%)
Nurses (working Places)	
King Fahd Central Hospital	155 (52.4%)
Prince Mohammed Bin	141 (47.6%)
Naser Hospital	
Years of experience	
0-4 Years	142 (48%)
5-9 Years	82 (27.7%)
10-14 Years	50 (16.9%)
15-19 Years	17 (5.7%)
20-25 Years	05 (1.7%)

The years of experience were divided into five categories: 0-4 years, 5-9 years, 10-14 years, 15-19 years, and 20-25 years. There were 48% of nurses with 0-4 years of experience, and 27.7% with 5-9 years of experience. However, 16.9% of the nurses had 10-14 years of experience, while 5.7% had 15-19 years of experience. Only 1.7% of them had more than two decades of nursing experience.

Table 2 provides the nurses' perspectives on COVID-19 patients and infection. Almost all of the nurses believed that COVID-19 was a viral infection, with 34.1% expecting the virus to be controlled by the vaccine and the remaining 66% not convinced that the vaccine would control the virus. The majority of nurses, 54.7%, were convinced that antibiotics could control the illness, while the remaining nurses were not. Almost all of the nurses followed the MOH standards for COVID-19 infection prevention. In this study, more than 90% of nurses considered that health care workers were at high risk when treating COVID-19-infected patients, and 76.7% of nurses considered COVID-19 may be fatal.

In this study, 97% of nurses were aware of COVID-19 symptoms such as fever, cough, sore throat, and shortness of breath, and 87.5% were aware of the lack of COVID-19 treatment availability. The limited infection signs such as sneezing, cold, stuffy and running nose were known by 63.9 % of the nurses, and 96.3% of the nurses were aware of the risk of chronic diseases in the elderly population, which may be at risk of COVID-19 infection. Approximately 80% of the nurses were not sure that COVID-19 patients could not spread the virus without the symptom of fever, and 93.6% were aware that COVID-19 is transferred by the droplets of an infected individual (Table-3).

The table-4 of this study describes the personal protection and isolation towards COVID-19 infection. The majority of the 78.7% nurses believed that mask can protect from the infecting from COVID-19. There was an assumption that 85.5% of the nurses were not in agreement that children and adolescents can avoid the measurements towards COVID-19. However, ~94% of the nurses believed that avoiding of gatherings at public places is the best method to control the virus. The majority of the 97% of nurses believed that isolation is the best method to control the COVID-19 virus in an infected person. 49% of the nurses confirmed that they have not visited any crowded place during the pandemic and 83.3% of them were confirmed that they use to wear the mask before leaving the home.

The nurses during the contacting any person admitted in the hospital is used to wear the personal protective equipment and 96% of them use to cover the mouth when they cough or sneeze. Almost 90% of nurses admit that they wash their hands when they touch their nose or cough/sneeze, 96% of them wash their hand after touching the contaminated objects. 93.3% of nurses has the habit of wearing mask without symptoms and 96.6% of the nurses' wear N95 mask when contacting the COVID-19 patients.

The general awareness in the nurses about COVID-19 disease were documented in Table-5. The 78.4% of the nurses believed that COVID-19 was successfully controlled by the Saudi Arabia and 88.2% of them believed that Saudi Arabia won against the battle towards COVID-19. Nearly, 92% of the nurses were self-isolated after treating the COVID-19 patients and 90% of the nurses believed that transmission of COVID-19 can be prevented by washing the hands. In this study, 85.5% of the nurses believe that COVID-19 can be controlled in the HCW with the prevention of hospital infection and control progarmme. Only 79.4% of the nurses were preferred to have the vaccine and 90.5% of the medical staff are ready to involve in the anti-epidemic community.

COVID-19 has become a life style disease in the global countries. Previously, it was declared as public health emergency of international concern in the last day of January (2020). The COVID-19 pandemic gives us many painful lessons, including the vulnerability and need for

preparedness, cooperation and monitoring of those living with chronic conditions (Davidson and Szanton 2020). Till now, it's a mystery about the existence of COVID-19/SARS-CoV-2 as how these original sources were transmitted. However, based on available genetic and epidemiological data indicate that SARS-CoV-2 is a zoonotic disease with the potential to spread directly from wildlife or through intermediate animal hosts or their products. Sustained human-to-human transmission has been verified in China, where a large number of healthcare professionals have been infected in clinical settings, resulting in overt clinical disease and mortality. One of the countries affected by the virus was Saudi Arabia. The first confirmed Case COVID-19 in the country was announced by the Saudi Minister of Health on 2 March 2020 (Alboaneen et al. 2020).

Table 2. Opinions of Nurses regarding COVID-19

Nurses opinion	Yes	No	No Idea
Is COVID-19 is a viral infection?	295 (99.7%)	0 (0%)	01 (0.3%)
Does COVID-19 Vaccine will control the infection?	101 (34.1%)	159 (53.7%)	36 (12.2%)
Antibiotics is the treatment option?	162 (54.7%)	117 (39.5%)	17 (5.8%)
MOH guidelines for prevention of disease transmission	0.7%	0.3%	99%
Healthcare workers are at a higher risk of infection?	269 (90.9%)	18 (6.1%)	09 (3%)
Can COVID-19 is a fatal?	227 (76.7%)	24 (8.1%)	45 (15.2%)

Table 3. Knowledge of COVID-19 symptoms

	Yes	No	Unknown
Clinical symptoms (Fever, Cough, Sore throat and shortness of breath)	287 (97%)	04 (1.3%)	05 (1.7%)
Currently no Treatment towards COVID-19	259 (87.5%)	19 (6.4%)	18 (6.1%)
Cold, sneezing, stuffy and running nose are the less infection for COVID-19	189 (63.9%)	75 (25.3%)	32 (10.8%)
Elder patients with chronic diseases are high risk of infecting COVID-19	285 (96.3%)	03 (1%)	08 (2.7%)
Person diagnosed with COVID-19 cannot infect without the symptom of fever	38 (12.8%)	237 (80.1%)	21 (7.1%)
COVID-19 is transmitted by respiratory droplet of the infected person	277 (93.6%)	12 (4.1%)	07 (2.3%)

Table 4. Personal protection and Isolation towards COVID-19 infection

	Yes (%)	No (%)	Sometimes (%)
Can normal person wear the mask to avoid COVID-19 virus?	233 (78.7%)	41 (13.9%)	22 (7.4%)
Can children and adolescents can avoid the measures for COVID-19 virus?	34 (11.5%)	253 (85.5%)	09 (3%)
Should we avoid the gatherings and public places to prevent the COVID-19 virus?	278 (93.9%)	07 (2.4%)	11 (3.7%)
Is isolation and treatment for COVID-19 is the best way to reduce COVID-19 virus?	287 (97%)	05 (1.7%)	04 (1.3%)
Is isolation being mandatory for the person who is communicated with infected person	283 (95.6%)	06 (2%)	07 (2.4%)
Did you visit any crowded places?	48 (16.2%)	145 (49%)	103 (34.8%)
Do you use to wear a mask before leaving the home?	248 (83.8%)	21 (7.1%)	27 (9.1%)
Do you use to remove the protective equipment carefully?	283 (95.6%)	05 (1.7%)	08 (2.7%)
Do you use to cover the mouth when you cough and sneeze?	284 (96%)	02 (0.6%)	10 (3.4%)
Do you wash your hands immediately after coughing, sneezing or rubbing the nose?	264 (89.2%)	04 (1.3%)	28 (9.5%)
Do you have a habit of wearing a mask with or without symptoms?	276 (93.3%)	08 (2.7%)	12 (4%)
Do you wash your hands after touching the contaminated objects?	284 (96%)	00 (0%)	12 (4%)
Do you use to wear the N95 mask during contacting with COVID-19 patients?	286 (96.6%)	02 (0.7%)	08 (2.7%)

As of May 20, 2021, the Kingdom of Saudi Arabia had documented 437,569 infected cases with COVID-19, of which 421,726 were recovered. Unfortunately, there were approximately 7214 cases of fatality, and the remaining 8629 cases were active. Based on worldometer data, Saudi Arabia ranked at 44th position among 222 countries were infected with COVID-19. Presently, USA and India are in the top row with the infected cases followed by Brazil and France. The recovery rate in the kingdom was documented to be 98% and mortality rate is less than 2%. The controls measures performed an important influence in limiting SARS-CoV-2 transmission with reduced deaths. In Saudi Arabia mortality is extremely low compared to other countries since the Kingdom of Saudi Arabia offers the best health services at all. The present study was designed as a questionnaire study carried out in Jazan city of Saudi Arabia. In this study, 296 nurses were included based on inclusion and exclusion criteria. The overall study concludes on an average of about 90-99% of the nurses have good knowledge COVID-19 and in treating the patients as per the MOH guidelines. All the nurses from both the hospitals followed precautionary measures by wearing masks, N95 masks, gloves, protective equipment, washing hands and sanitizing (Alshammari et al. 2020).

Table 5. General awareness about COVID-19 among the nurses

General Awareness	Agree (%)	Disagree (%)	Neutral (%)
Do you agree that COVID-19 was successfully controlled in the Saudi Arabia	232 (78.4%)	15 (5.1%)	49 (16.5%)
Does Saudi Arabia win against the battle towards COVID-19	261 (88.2%)	13 (4.4%)	22 (7.4%)
Does COVID-19 infected nurses will be self-isolating?	271 (91.6%)	17 (5.7%)	08 (2.7%)
Transmission of COVID-19 can be prevented by washing hands	267 (90.2%)	14 (4.7%)	15 (5.1%)
Can COVID-19 be controlled in the HCWs with the prevention of hospital infection and control program	253 (85.5%)	14 (4.7%)	29 (9.8%)
Will you prefer to have the vaccine?	235 (79.4%)	22 (7.4%)	39 (17.2%)
Does medical staff is ready to participate in the anti-epidemic community	268 (90.5%)	08 (2.7%)	20 (6.8%)

However, on limited information such as vaccine, antibiotic treatment, asymptomatic transmission of infection from person to person, and prevention of COVID-19 transmission by washing hands were not known during the initial period of the pandemic for some of the staff. After the approval of MOH guidelines, all nurses were obliged to take strict precautions, measurements, and knowledge when dealing with infected patients in hospitals throughout the pandemic. In this questionnaire-based study, we have recorded the basic details, nurses' opinion, knowledge and general awareness about COVID-19 and additionally we have recorded about the PPE kit and quarantine after handling the infected persons. Limited studies were performed in the HCWs in the Saudi Arabia and among them nurses were also enrolled (Huynh et al. 2020; Asaad et al. 2020; Saqlain et al. 2020; Nepal et al. 2020; Qattan et al. 2021: Rabbani and Saigul 2021; Aleanizy and Alqahtani 2021).

The WHO has lot of impact in updating the information and requesting for the precautions. During the pandemic crisis, massive amounts of up-to-date information regarding COVID-19 were disseminated around the world. The WHO communicates with global research and development scientists and global health experts, and set new standards to prevent and assist in the spread of the coronavirus pandemic. The Ministry of Health in Saudi Arabia has played a major role in controlling the pandemic virus within the Kingdom. A special care was taken for the infected Saudi and non-Saudi person with free treatment, comfortable quarantine and strict lock-down was implemented. Based on WHO approval guidelines MOH prepared the COVID-19 protocols and were implemented for an effected and confirmed COVID-19 patients. Additionally, COVID-19 infected persons and previously diagnosed with sickle cell disease, infectious diseases, chronic diseases, pregnancy women and neonates were taken the special care in treating them (Rabbani and Saigul 2021; Aleanizy and Alqahtani 2021).

MOH has taken many precautions in the Saudi Arabia to combat this pandemic and virus. Initially, there was no vaccine was available but presently, Pfizer-BioNTech and Oxford-AstraZeneca was available in the kingdom. In this study, almost 80% of nurses were shown interest towards vaccine. Both these vaccines were approved by the US Food and Drug Administrations (Tanne 2020). A recent study from Saudi Arabia in the HCW was carried out in acceptability of the COVID-19 vaccine and study results confirmed about 50.5% are willing towards having the vaccine. However, in this study 80% of HCWs are interested towards taking the vaccine. Specially nurses have a significant role in the effectiveness of the vaccine progarmme; research has shown that vaccine knowledge and attitudes impact the intentions and recommendation for the vaccine (Ellingson et al. 2010; Nzaji et al. 2020; Qattan et al. 2021).

Personal protective equipment (PPE) has become critical during the COVID-19 pandemic due to the virus's extraordinarily contagious nature and aggression, as well as the virus's limited treatment options. PPEs are used in a variety of settings, including industrial, pollution control, sports, and healthcare (Setia and Verma 2021). The biggest issue at the start of the pandemic was a lack of PPE for HCWs, as well as a lack of training in its use. Global studies document the importance of PPE kits during the pandemic in HCWs and in this study 95.6% of the nurses/HCWs were

known to use and remove the PPE carefully. Additionally, hospital infection and control program played a major role in controlling of COVID-19 (Hossain et al. 2021).

CONCLUSION

The findings of the present study recommends the nurses, HCWs and all the residents of Saudi Arabia to take the vaccine and prevent the spread of COVID-19 as new strains are developing in the global population. Future studies to implement in the large sample size from the Saudi population. Nurses played a critical role in the treatment of COVID 19 infected patients in Saudi Arabia, as nurses and HCWs were at risk of becoming asymptomatic carriers due to their role in disease transmission.

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