Texila International Journal of Public Health
ISSN: 2520-3134
DOI: 10.21522/TIJPH.2013.12.02.Art010

Knowledge, Perception, and Preparedness of Ghanaian Nurses Towards a Pandemic or Another Wave of Covid-19: A Cross-sectional Study

Victor Collins Wutor[1,2*], Benoit Banga N'guessan[3,4,5]

[1]*Department of Biotechnology, Microbiology and Public Health, AEServe, Lethbridge, Alberta, Canada*

[2]*Faculty of Pharmacy and Pharmaceutical Sciences. University of Alberta, 2-35 Medical Sciences Building, Edmonton, Alberta, Canada*

[3]*Department of Pharmacology and Toxicology, School of Pharmacy, College of Health Sciences, University of Ghana, Legon, Accra, Ghana*

[4]*Department of Pharmacology and Toxicology, School of Pharmacy, University of Health and Allied Sciences, Volta Region, Ghana*

[5]*Institute of Traditional and Alternative Medicine, University of Health and Allied Sciences, Volta Region, Ghana*

Abstract

This significant study aimed to determine Ghanaian nurses' knowledge, perception, and preparedness for a pandemic or another wave of COVID-19. This comprehensive, cross-sectional study was conducted between May and July 2023. The questionnaire, a crucial tool, was distributed through Facebook, WhatsApp, and other social media links. A total of 1347 responses from the nurses, a substantial number, were collected from all 16 regions of Ghana. The inclusion criteria, a key aspect, are based on the in-service nurses directly linked with hospitals and medical facilities who had direct contact with patients. About twice the number of female nurses (906, 67.3%) responded to the survey compared to 441, 32.7% (males). As the study reveals, Ghanaian nurses were knowledgeable, had a good perception, and were prepared for a pandemic or another wave of Covid-19. There was a strong correlation, a significant finding, between the nurse's years of practice and the risk of perception. Also, female nurses (67.3%) know more about the virus spread and treatment than their male counterparts (32.7%). Unfortunately, the level of preparedness for a pandemic or another wave of COVID-19 was low.

Keywords*: COVID-19, Ghana, Knowledge, Nurses, Perception, Preparedness.*

Introduction

As a global community, the world has witnessed the rapid emergence and expansive spread of various infectious diseases, which pose significant challenges to human health in the 21st century. The critical role of healthcare workers, including nurses, pharmacists, and physicians, can be explicitly highlighted during pandemics like the H1N1 influenza, Ebola virus disease, and most recently, the COVID-19 pandemic. The coronavirus pandemic, a global crisis, first spread through a novel virus linked with SARS 2 and known as nCov-2019. Initially, in December 2019, the pneumonia symptoms became viral in Wuhan, a country in China [1]. The diseases spread rapidly in China and other countries, with documented cases globally. Eventually, in 2020, there were almost more than 30 million confirmed positive cases, depicting a death rate of 3.0% [2]. In West African countries, Ghana was ranked at the 5th number with confirmed reported cases of

Received: 09.05.2024 ***Accepted: 14.05.2024*** ***Published on: 28.06.2024***

****Corresponding Author: vcwutor@gmail.com***

45,877. The reported deaths were 297, according to the report of September 2020 [3]. In underdeveloped countries such as Ghana, where resources are minimal, health workers' response to pandemic outbreaks is paramount and positive. With its global implications, this cross-sectional study investigates Ghanaian nurses' knowledge, perception, and preparedness toward future pandemic challenges.

All countries followed the protocol the World Health Organization (WHO) compiled in response to the COVID-19 pandemic to provide infection, prevention, and control (IPC) practices [4]. The role of healthcare workers is necessary for maintaining and implementing such prevention and measuring steps during infectious pandemics. During such infectious outbreaks, healthcare workers have always been the frontline heroes for public health and safety. COVID-19 transmission was mainly through travelling and trading from one country to another globally. This has affected global urbanization, population, and the environment. Ghana remains one of the countries vulnerable to such novel virus threats during the COVID-19 pandemic. It shakes the country's health infrastructure, leading to the preparation for future pandemics.

The healthcare challenges faced by Ghana's population (31 million) are a significant concern, mainly linked to infectious diseases, maternity issues, paediatrics, and viral diseases. These facilities are provided primarily by public health centers and semi-government and private medical institutions. Nurses are a significant part of the system in every country as they play pivotal roles and are in direct contact with prevention, awareness, and infected patient care and treatment. The duties of nurses and other health workers are directly linked with the infected patients, which not only increases the disease risk but also affects the fear of death and exposure to disease as compared to non-healthcare workers [5] [6]. The effective responses of healthcare persons during the pandemic depend upon knowledge, awareness, positive perception, therapeutic and prophylactic treatment, and preparedness against the pandemic, as in the case of COVID-19 [7]. Sufficient knowledge about disease transmission, spread, clinical manifestation, and precautionary measurements is essential, especially for nurses and doctors. The experience and practice of the nurses in dealing with infected patients are mandatory. Personal knowledge about the coronavirus infection, symptoms, transmission, personal protective equipment (PPE), vaccine availability, disease treatment, medicine dosage, and safety measurements are imperative for nurses to provide adequate responses against the pandemic. As a health workforce, nurses' knowledge should be evaluated to identify and manage infectious outbreaks. However, many studies highlight the need for preparation and knowledge of health workers in the context of pandemics [8].

Furthermore, many studies show a lack of knowledge about viral disease, which impedes the influential role of nurses in such outbreaks. [9] [10]. A Cochrane review accounted for several factors that led to the inability of healthcare workers during the COVID-19 pandemic [11]. The minimal management support, lack of qualitative and quantitative measurements (including equipment, i.e., masks, gloves, sanitisers), use of vaccines, and patients' fear were significant barriers to following the IPC guidelines [11].

Nurses' work experience is a significant factor associated with elevated risk perception, direct contact with disease, disease awareness, and positive attitudes toward disease and patients. [12]. Therefore, professional work experience, knowledge, perception, planning, preparation, and understanding are the driving forces to achieve practical goals during the future pandemic. Most previous studies have explained the disease epidemiology, demand for treatment, and emergency preparations [13] [14]. This study indicates the nurses'

knowledge, perception, and preparedness for the upcoming wave of COVID-19 in Ghana nationally.

Materials and Methods

Study Design and Period

This study was designed as a cross-sectional questionnaire-based survey that obtains data from nurses across all regions of Ghana. This design facilitates the data collection at a single point in time without including observed variables.

The standard criteria for the questionnaire were based mainly on demographics, sex, region of practice, knowledge, perception, and preparedness of the nurses toward the COVID-19 pandemic or upcoming wave of the virus. The instruments utilized in prior relevant studies were analyzed thoroughly to make the questionnaire more feasible and valid.

The data was collected between May and July 2023.

Study Area

This study was conducted in Ghana. The regions targeted in Ghana have primarily healthcare systems at the national, regional, and district levels. There are many public and private hospitals and health centers in those regions of Ghana. The Health Ministry controls all health-related policies and coordinates with health service providers to maintain and implement public healthcare plans. During the COVID-19 pandemic, the Ghanaian Ministry of Health collaborated with Health services to initiate a group of health-related workers, including professionals, nurses, pharmacists etc. These groups execute the plans and initiate awareness programs to stop the spread of Coronavirus across the country.

This study targeted only nurses across all 260 districts of Ghana, including 16 regions. The primary purpose was to obtain an equal distribution of the data nationally.

Targeted Population

The study population comprises nurses who provide direct medical care to patients in public and private hospitals and emergency health centers. The questionnaire and consent form clearly stated that only nurses working and with experience in health centers and hospitals were included.

Sampling

The sample size for the study was determined by using the online OpenEpi formula (https://www.openepi.com/SampleSize/SSPropor.htm), targeting a 95% confidence level, a standard deviation of 0.5, and a confidence interval (margin of error) of ± 5%. The Statistical Package for the Social Sciences (SPSS Inc., version 22, IBM, Chicago, IL, United States) will be used to analyze all study data with $p < 0.05$ as a level of statistical significance. Descriptive statistics will present frequency, percentages, mean, standard deviation, and median.

According to the Ghana Registered Nurses and Midwives Association (GRNMA) website (https://ghananurses.org), there are 40073 members. A simple random sampling technique was opted to choose every relevant member for this study. Using OpenEpi online formulary, the sample size for nurses should be 384.

However, this study includes 1347 responses from nurses from different backgrounds and regions of Ghana. The SurveyMonkey application was employed to target the primary respondents and ease data analysis. University of Health and Allied Sciences, Ho, Ghana (UHAS-REC A 5 [4] 22-23) approved and granted the ethical clearance for the study.

Results

A total of 1347 responses from the nurses were collected from all 16 regions of Ghana. The inclusion criteria are based on the in-service nurses directly linked with hospitals or facilities that had direct contact with patients.

The questionnaire was distributed through Facebook, WhatsApp, and other social media links.

The demographic characteristics included in the study are based on age, region, gender, and years of practice, as shown in Table 1.

Table 1. Demographic Characteristics of the Study Participants

Variables	**Total numbers (%)**
Gender	
Male	441 (32.7)
Female	906 (67.3)
Age	
Less than 30	618 (45.9)
31-40	585 (43.4)
41-50	90 (6.7)
Above 50	54 (4.0)
Years of Practice	
Less than 5	540 (40.1)
5-9	600 (44.5)
10-14	108 (8.0)
15-19	51 (3.8)
Above 20	48 (3.6)
Region of Practice	
Greater Accra	247 (18.3)
Bono	66 (4.9)
Savannah	60 (4.5)
Western North	81 (6.0)

Ashanti	87 (6.5)
Central	166 (12.3)
North East	111 (8.2)
Northern	72 (5.3)
Bono East	30 (2.2)
Upper East	39 (2.9)
Oti	39 (2.9)
Upper West	39 (2.9)
Volta	105 (7.8)
Western	97 (7.2)
Eastern Region	69 (5.1)
Ahafo	39 (2.9)

Table 2 presents results on the nurses' knowledge. This included knowledge about general symptoms of coronavirus, symptoms, severity, mode of transmission, and prevention or preventive measures.

Table 2. General Knowledge Symptoms of Covid-19

Symptoms	**Responses**	**Nurse**	**P-value**
Fever	Yes	1332	< .001
	No	15	
	I don’t know	0	
Runny Nose	Yes	1299	< .001
	No	45	
	I don’t know	3	
Sore throat	Yes	1258	< .001
	No	82	
	I don’t know	7	
Joint and muscle pain	Yes	1237	< .001
	No	95	
	I don’t know	15	
Shaking chills	Yes	1265	< .001
	No	76	

	I don’t know	6	
Shortness of breath	Yes	1293	< .001
	No	48	
	I don’t know	6	
Diarrhea	Yes	1185	< .001
	No	143	
	I don’t know	19	
Fatigue	Yes	1264	< .001
	Nos	71	
	I don’t know	12	
Dry cough	Yes	1283	< .001
	No	58	
	I don’t know	6	
Nasal congestion	Yes	1197	< .001
	No	138	
	I don’t know	12	
Weight loss	Yes	1117	< .001
	No	197	
	I don’t know	33	
Stomach discomfort	Yes	1186	< .001
	No	158	
	I don’t know	3	
Difficulty sleeping	Yes	1281	< .001
	No	57	
	I don’t know	9	
The incubation period is 5–14 days.	Yes	1311	< .001
	No	30	
	I don’t know	6	

Which of the following situations are means of transmission/spread of coronavirus (COVID-19)?

Symptoms	**Responses**	**Nurse**	**P-Value**
Coughing or sneezing near people infected with the coronavirus (COVID-19)	Yes	1299	< .001
	No	48	
	I don’t know	0	
Go to areas/countries affected by the coronavirus (COVID-19)	Yes	1269	< .001
	No	78	
	I don’t know	0	
Touching objects or surfaces that have been in contact with someone who has the virus	Yes	1314	< .001
	No	27	
	I don’t know	6	
Shake hands with someone who has an	Yes	1148	< .001
	No	199	

active case of coronavirus (COVID-19)	I don't know	0	
Being on the same plane with someone with coronavirus (COVID-19)	Yes	1290	< .001
	No	57	
	I don't know	0	
Eating food prepared by someone infected or exposed to the coronavirus (COVID-19)	Yes	774	< .001
	No	537	
	I don't know	36	
Participate in blood transfusions	Yes	620	< .001
	No	700	
	I don't know	27	
By relating to people who were in a hospital or emergency room	Yes	771	< .001
	No	552	
	I don't know	24	
Relating to cases identified by doctors	Yes	837	< .001
	No	504	
	I don't know	6	
About cases identified during evaluations at entry points to my country	Yes	888	< .001
	No	459	
	I don't know	0	

Severity of the coronavirus (COVID-19).

It can be cured	Agree	576	< .001
	Disagree	173	
	Not sure	598	
It is highly contagious	Agree	1128	< .001
	Disagree	6	
	Not sure	213	
The coronavirus mortality rate is worse than that of influenza or tuberculosis	Agree	1254	< .001
	Disagree	15	
	Not sure	78	
COVID-19 causes permanent physical damage to patients	Agree	1134	< .001
	Disagree	54	
	Not sure	159	
You have symptoms similar to common flu and influenza	Agree	1272	< .001
	Disagree	9	
	Not sure	66	
	Agree	561	< .001
	Disagree	705	

My community/country does not have a coronavirus vaccine	Not sure	81	
My community/country does not have adequate medicine or treatment for the disease	Agree	579	< .001
	Disagree	693	
	Not sure	75	
Hospitals in my community/country have not taken adequate infection control measures	Agree	579	< .001
	Disagree	699	
	Not sure	69	
Coronavirus impact is worse compared to influenza or common cold	Agree	1169	< .001
	Disagree	63	
	Not sure	115	
The authorities of my country are prepared to face the disease	Agree	1227	< .001
	Disagree	21	
	Not sure	99	
The response of the health authorities of my country/community is effective	Agree	1236	< .001
	Disagree	27	
	Not sure	84	

Knowledge about contagion prevention/precaution measures

Washing hands vigorously (soap/water) for 20 seconds helps prevent disease	Agree	1290	< .001
	Disagree	0	
	Not sure	57	
Special care should be taken if a person has coronavirus (COVID-19) symptoms in my community	Agree	1287	< .001
	Disagree	0	
	Not sure	60	
Personal hygiene	Agree	1293	< .001
	Disagree	0	
	Not sure	54	
Healthy lifestyle	Agree	1248	< .001
	Disagree	0	
	Not sure	99	
Daily temperature monitoring	Agree	1296	< .001
	Disagree	0	
	Not sure	51	
Avoid travelling abroad	Agree	520	< .001
	Disagree	641	

	Not sure	186	
Use of mask	Agree	1311	< .001
	Disagree	3	
	Not sure	33	
Clean environment	Agree	927	< .001
	Disagree	102	
	Not sure	318	
Stay home if one is experiencing symptoms of COVID-19.	Agree	1281	< .001
	Disagree	3	
	Not sure	63	
Seek medical attention if one is experiencing symptoms of COVID-19	Agree	1296	< .001
	Disagree	0	
	Not sure	51	
Avoid crowded places	Agree	1302	< .001
	Disagree	0	
	Not sure	45	
Sending passengers with coronavirus symptoms (COVID-19) to a hospital or referral center for examination	Agree	1278	< .001
	Disagree	3	
	Not sure	66	
Use a disinfectant at home or work	Agree	1287	< .001
	Disagree	3	
	Not sure	57	
Confirm symptoms on any website	Agree	880	< .001
	Disagree	62	
	Not sure	405	
Wore something to clean objects that may have come in contact with someone with coronavirus (COVID-19)	Agree	1284	< .001
	Disagree	3	
	Not sure	60	
Avoid Asian restaurants or shops	Agree	396	< .001
	Disagree	738	
	Not sure	213	
Cancel appointments in hospitals or doctor's offices.	Agree	504	< .001
	Disagree	735	
	Not sure	108	
Avoid public transportation	Agree	1128	< .001
	Disagree	69	
	Not sure	150	
Antibiotics are the first-line treatment for the management of coronavirus (COVID-19)	Agree	1232	< .001
	Disagree	24	
	Not sure	91	

Preparation of raw meats and other foods with different knives	Agree	691	< .001
	Disagree	572	
	Not sure	84	

The participant nurses' responses to the risk of perception toward coronavirus show significant values in compliance with the responses collected as yes, no, and I don't know. These responses are given in Table 3.

Table 3. Perceived Susceptibility to Covid-19

Questions	**Responses**	**Nurse**	**P-Value**
Do you think there is a stigma related to the coronavirus (COVID-19)	Yes	1119	< .001
	No	168	
	I don't know	60	
Thinking that I could become infected with coronavirus (COVID-19) makes me nervous/anxious	Yes	775	< .001
	No	536	
	I don't know	36	
Nothing I do can stop the risk of catching me	Yes	595	< .001
	No	713	
	I don't know	39	
If I contracted the coronavirus (COVID-19), it will have serious consequences for me or my relatives	Yes	600	< .001
	No	705	
	I don't know	42	
I get upset when I think about the coronavirus (COVID-19)	Yes	591	< .001
	No	729	
	I don't know	27	
Coronavirus (COVID-19) problems will pass quickly	Yes	729	< .001
	No	381	
	I don't know	237	

Are you afraid of:

Questions	**Responses**	**Nurse**	**P-Value**
Fear of being in contact with people with flu symptoms (e.g. cough, runny nose, sneezing, fever)	Yes	750	< .001
	No	579	
	I don't know	18	
Fear of eating out (for example, street vendor centers, food courts)	Yes	564	< .001
	No	723	
	I don't know	60	
Fear of being in contact with people who have just returned from abroad	Yes	552	< .001
	No	729	
	I don't know	66	
Fear of visiting hospitals	Yes	594	< .001

	No	735	
	I don’t know	18	

Perceived susceptibility to coronavirus infection (COVID-19), Evaluate the possibility of contracting the disease:

Oneself	Very likely	240	< .001
	Probable	234	
	Unlikely	873	
My relatives	Very likely	561	< .001
	Probable	321	
	Unlikely	465	
People over 60years	Very likely	696	< .001
	Probable	648	
	Unlikely	3	
Adults	Very likely	741	< .001
	Probable	582	
	Unlikely	24	
Children	Very likely	231	< .001
	Probable	354	
	Unlikely	762	
Medical services personnel	Very likely	420	< .001
	Probable	909	
	Unlikely	18	
Food vendors	Very likely	492	< .001
	Probable	834	
	Unlikely	21	
Food handlers	Very likely	474	< .001
	Probable	843	
	Unlikely	30	
General public	Very likely	1029	< .001
	Probable	318	
	Unlikely	0	
Taxi drivers	Very likely	813	< .001
	Probable	534	
	Unlikely	0	

Where are people likely to get coronavirus (COVID-19)?

Home	Very likely	148	< .001
	Probable	604	
	Unlikely	595	
Health institutions	Very likely	399	< .001
	Probable	927	
	Unlikely	21	
Public transport	Very likely	1092	< .001
	Probable	255	

	Unlikely	0	
Markets or shops	Very likely	1068	< .001
	Probable	267	
	Unlikely	12	
Countries affected by the coronavirus (COVID-19)	Very likely	876	< .001
	Probable	465	
	Unlikely	6	

What do you think the percentage of?

Efficacy of treatments for coronavirus (COVID-19)	**Very likely**	645	< .001
	Probable	681	
	Unlikely	21	
Likelihood of having a major outbreak of coronavirus (COVID-19) from person to person in my community	**Very likely**	254	< .001
	Probable	640	
	Unlikely	453	
Concern that you or your family members will get the virus	**Very likely**	254	< .001
	Probable	628	
	Unlikely	465	
Having effective medications or remedies available	**Very likely**	695	< .001
	Probable	646	
	Unlikely	6	

The preparedness level of the responders was analyzed by done, in progress, and I don't know options. This data set provides a fair view of their readiness to fight another wave of COVID-19 or a pandemic in the future.

Table 4. Level of Preparedness

Question	**Response**	**Nurse**	**P-Value**
Education/training about COVID-19 infection control and update policy as required?	Done	715	< .001
	In progress	563	
	I don't know	69	
Informational materials (e.g., brochures and posters) on COVID-19?	Done	673	< .001
	In progress	620	
	I don't know	54	
Alcohol-based hand sanitizer for hand hygiene is available in every patient room?	Done	685	< .001
	In progress	605	
	I don't know	57	
PPE available immediately outside of the patient room is provided	Done	652	< .001
	In progress	641	
	I don't know	54	
Ensuring safety in working place	Done	637	< .001
	In progress	647	
	I don't know	63	
	Done	628	< .001

Readiness to implement every standard precaution	In progress	662	
	I don’t know	57	
Activities to prevent COVID-19 transmission to family members	Done	633	< .001
	In progress	644	
	I don’t know	70	
Readiness for caring for febrile patients	Done	624	< .001
	In progress	657	
	I don’t know	66	
Readiness of self away from family members	Done	640	< .001
	In progress	650	
	I don’t know	57	
Readiness for caring for COVID-19-infected patients	Done	640	< .001
	In progress	644	
	I don’t know	63	
Readiness overwhelmed with the new COVID-19	Done	240	< .001
	In progress	978	
	I don’t know	129	
Readiness for telling family and friends if infected with COVID-19	Done	648	< .001
	In progress	630	
	I don’t know	69	
Readiness for caring for COVID-19-infected patients if their colleagues are infected with COVID-19	Done	633	< .001
	In progress	653	
	I don’t know	61	
The readiness of the institution to support healthcare providers	Done	606	< .001
	In progress	684	
	I don’t know	57	
Readiness for COVID-19 crisis that increased workload	Done	615	< .001
	In progress	666	
	I don’t know	66	
Proper infection control training has been given	Done	648	< .001
	In progress	645	
	I don’t know	54	
Support from your team members	Done	612	< .001
	In progress	669	
	I don’t know	66	
Readiness that might eventually get COVID-19 at work	Done	226	< .001
	In progress	1013	
	I don’t know	108	
Determine a contingency staffing plan.	Done	615	< .001
	In progress	666	
	I don’t know	66	
Designate a point of contact for the healthcare union.	Done	663	< .001
	In progress	633	
	I don’t know	51	

Designate a point of contact for the family members.	Done	685	< .001
	In progress	620	
	I don’t know	42	

Discussion

The study's findings explain the highly significant data regarding the knowledge-related questions. Nurses' years of experience and work practice effectively impact their knowledge and perception. Ninety-nine percent of the participants agree that fever is a significant symptom of coronavirus infection, as shown by other studies [15]. However, 15% of the total population has no idea that weight loss is a symptom of COVID-19. 88% yes responses were calculated in response to diarrhoea as a symptom, which indicates a significant P-value and shows relevance with the previous studies that explain diarrhoea as 1 in every five patients infected with COVID shows diarrhoea, nausea, and vomiting symptoms [16].

Table 4 assesses Ghanaian nurses' preparedness level for a pandemic or another wave of COVID-19. The response to the question on education/training about COVID-19 infection control and updating policy as required was evident: There were no policies, and the facilities relied on ad hoc measures.

Based on the results we have analyzed, female participants (67.3%) have more knowledge about the virus spread and treatment than males (32.7%). Young nurses (less than 30 years) with more than nine years of experience in the field have positive feedback about their perception and preparedness for the upcoming pandemic.

The mode of disease transmission mainly depends upon the respiratory tract as it is a respiratory-born pathogen. 99% of the participants agree that coughing or sneezing is a significant transmission mode. Similarly, the severity of the virus in compliance with the curable received 576 yes responses. However, 598 participants don’t know about the disease treatment [17, 18, 19]. At the same time, the findings were inadequate, as 213 participants were unsure about the high containment of the coronavirus disease. The severity of the mortality rates depends on the various factors in the case of COVID-19, such as age, environment, health conditions, and treatment availability. According to a recent study by Kavanagh et al[20], the mortality rate by COVID is higher than the H1N1 influenza and tuberculosis. Our study findings also indicate the adequate knowledge of the in-practice nurses against the COVID-19 pandemic [20].

Hand hygiene is the most basic protocol and safety measure to prevent the spread of coronavirus disease. Many studies have explained the positive results of adopting a hygienic environment and vigorous hand washing and found it quite effective in prevention [21, 22]. 1290 participants out of 1347 agree that washing hands for approximately 20 years can prevent COVID-19. Similarly, personal hygiene is also as important and influential.

There is a strong association between the nurse's years of practice and the region with the risk perception. Nurses are more likely to perceive the risk of disease infection when they contact with infected patients. Since there is a stigma related to the Coronavirus globally about its treatment, vaccination, and other health-related issues. 1119 were recorded in response, increasing the nurses' perception of risk. The nurses have a significant role in managing and implementing the IPC guidelines and patient awareness among the front liners. Seven hundred fifty participants are afraid of coming in contact with infectious people, and this situation is not expected as the nurses have to take care of the patients. Six hundred ninety-five nurses are very likely perceived to have the

proper and effective medications and treatment for the coronavirus.

Almost 80% of the responders are more likely to perceive the susceptibility of contracting the coronavirus disease through the general public than the others. At the same time, 231 responders have a perception of having a disease through the children. These results prove the significant positive feedback of the participants as the coronavirus spread more by contacting the general public. Thus, quarantine or isolation reduces the risk of COVID-19 [23]. Similarly, 1092 responses related to virus transmission are more likely to perceive feedback about using public transport and marketplaces.

Fifty percent of nurses are likely to have effective medications and remedies available, while the other 50% think it is probable. A study conducted in US adults suggested that the mRNA vaccines for the coronavirus were effective [24].

Furthermore, significant positive responses were observed in response to the preparedness level of the nurses toward the upcoming pandemics. The reactions show 50% positive results in most of the questions related to the preparedness of the nurses in Ghana country. However, 978 participants are ready to be overwhelmed by the new upcoming wave of COVID-19 across different regions. The progress is still under consideration as in Ghana, there is no ready availability of medicines, vaccines, masks, hand sanitizers, etc. As there is no definite treatment for the virus, medical health workers are prepared to face such pandemics in the future. (Saba, 2020). Therefore, the data indicates that enough knowledge and education about the virus and the use and availability of PPE are mandatory to decrease the disease risk. The institutes and health unions are pretty prepared for another wave of COVID-19.

Conclusion

In light of the evolving landscape of infectious diseases and the ongoing COVID-19 pandemic, there is a pressing need to evaluate the readiness of Ghanaian nurses to confront future pandemics. This cross-sectional study seeks to fill this gap by assessing Ghanaian nurses' knowledge, perception, and preparedness toward future pandemic challenges. The findings of this study are expected to inform evidence-based interventions aimed at strengthening the capacity of Ghana's nurses and healthcare system to respond to infectious disease outbreaks effectively. From the survey, Ghanaian nurses were knowledgeable, had a good perception, and were prepared for a pandemic or another wave of Covid-19. There is a strong association between the nurse's years of practice and the risk of perception. The responses from Table 4 indicate that Ghana needs to develop a national document on pandemics, as the reliance on ad hoc measures resulted in the unnecessary loss of lives.

Based on the analyzed results, female nurses (67.3%) know more about the virus spread and treatment than their male counterparts (32.7%).

Through collaborative efforts involving policymakers, healthcare providers, and stakeholders, Ghana can enhance its resilience and preparedness to safeguard public health in the face of emerging pandemic threats. Ghana needs a blueprint for pandemic management that includes education, prevention, containment, and response.

Consent

Informed consent was obtained from all eligible study participants.

Conflicts of Interest

The authors have declared no conflicts.

Acknowledgement

The authors are grateful for Dr. Sadia Satti's contribution.

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