Perception and factors affecting practice of preventive measures of coronavirus disease among nurses in tertiary health institutions in Anambra state, southeast Nigeria

Linda C. Odikpo, Vera I. Onyekaonwu, Anulika J. Afonne

Abstract

BACKGROUND: COVID-19 is a contagious disease without any treatment, vaccine, or immunity, which the only way out is the practice of preventive measures. This article assessed the perception and factors influencing the practice of preventive measures to COVID-19 among nurses in Anambra State, Nigeria. The study objectives include to determine the perception of nurses toward COVID-19 and to determine factors that influence the practice of preventive measures to COVID-19 among nurses in tertiary hospitals in Anambra State.

MATERIALS AND METHODS: The design for the study was descriptive cross-sectional survey conducted among 344 nurses in the two tertiary institutions.

RESULTS: Three hundred and three (88.1%) nurses had no formal training on COVID-19 protocol. They have a good perception of the disease as, among others, they (165 [48.0%]) see it to be highly contagious, 207 (60.2%) can recognize symptoms easily, 168 (48.8%) believed that COVID-19 could be handled professionally based on their experience, 155 (45.1%) responded that there is no vaccine yet for the disease, and 200 (58.1%) responded that patients should not hide their symptoms and travel history to avoid infecting other people. The result on the false benefits has 323 (93.9%) who responded that COVID-19 preventive measures will predispose one to the disease, 319 (92.7%) who responded that the preventive measures will not slow the spread of the disease, 288 (83.7) who responded that it is independent of normalcy returning to areas affected, and 327 (95.1%) who responded that COVID-19 preventive measures are among the effective ways to mitigate the disease and enhance life sustainability. Some work-related/institutional and disease-specific factors influence their practice of preventive measures to COVID-19. Such factors include the time to use personal protective equipment (PPE) in an emergency (170 [49.4%]), remembering to use PPE (158 [45.9%]), insufficient nursing staff during a shift (158 [43.0%]), and too many responsibilities during a shift (178 [51.7%]).

CONCLUSION: With the increasing death as a result of COVID-19, of which health workers are not immune to, it is essential to annihilate all negative factors that may impede the accurate practices of the preventive measures and also support the nurses with the necessary tools and knowledge to mitigate their exposure to the disease.

Keywords:

COVID-19, Nigeria, nurses, perception, practice guideline, prevention

Department of Nursing Science, Nnamdi Azikiwe University, Awka, Nnewi Campus, Nigeria

Address for correspondence:
Dr. Linda C. Odikpo, Department of Nursing Science, Nnamdi Azikiwe University, Awka, Nnewi Campus, Nigeria. E-mail: lc.odikpo@unizik. edu.ng

Introduction

COVID-19 is a contagious disease that is ravaging humans globally since December 31, 2019, when its outbreak began in China[1] and as of July 10, 2020, 557,543 people have died so far from the COVID-19 outbreak with a 1% change every

day.[2] The COVID-19 virus transmits mainly through droplets of saliva or nasal exudate when an infected individual coughs or sneezes. Therefore, it is essential to practice preventive measures to break the chain of the infection as specific vaccines or treatments for COVID-19 are not yet known.[3] The preventive measures to COVID-19 include washing of hands regularly with soap and water or cleaning them with alcohol-based hand rub, maintaining at least 2 m distance between an individual and people coughing or sneezing, avoid touching the face, covering the mouth and nose when coughing or sneezing, staying at home if feeling unwell, refraining from smoking and other activities that weaken the lungs, and practising of physical distancing by avoiding unnecessary travel and staying away from large groups of people among others.[3] The availability of preventive measures to COVID-19 does not guarantee the practice among nurses which might be as a result of a complex interplay of work-related/institutional and disease-specific/psychological factors including their perception toward the disease. As health-care providers all over the world continue to risk dying to save others in the fight against the COVID-19 pandemic, many have lost their lives, and thousands of them, including nurses in Nigeria, tested positive to the disease. Nigeria as at July 9, 2020, reported 30,748 cases and 698 deaths across the 36 states and the Federal Capital Territory.[4]

Studies on factors affecting the practice of preventive measures to COVID-19 seems to be scarce, as most of the studies focused on the knowledge, attitude, and practice with regard to COVID-19.[5] Maysa *et al*.[6] researched on factors influencing compliance to the infection control precautions among nurses and physicians in Jordan and discovered that participants from the private hospital had higher knowledge and compliance scores, length of experience, knowledge, and attitudes were significant predictors of reported compliance to infection control precautions. Kavookjian[7] opined that one of the most significant factors in the spread of COVID-19 is the decision by some persons not to take precautions or make changes in their daily lives to embrace preventive practices such as social distancing, quarantine, and high cleanliness. Other factors studied were related to standard precautionary measures and included lack of knowledge, lack of means, and lack of time. These factors can influence the health-care workers' compliance with standard precautions.[8] On the perception of nurses toward COVID-19,[9] perceived susceptibility to contracting the virus, displaying stigmatized behaviour (59.1%), and fear of contracting the virus from others (70.2%) was identified to influenced health care workers perception and practice of preventive measures to the disease. Hashmi *et al*.[10] studied response to and perception of nurses during COVID-19. They discovered grouping of perception into (1) perceived knowledge,

awareness, and seriousness of COVID-19, (2) perceived personal ability to handle and manage the COVID-19, (3) perceived organizational capability of handling and managing the COVID-19, and (4) barriers in handling and managing COVID-19. Parikh *et al*.[11] studied COVID-19 pandemic's knowledge and perception of the public and health-care professionals and discovered that about 80% of the health-care professionals and 82% of the general public were worried about being infected.

In Nigeria, however, there is a paucity of information on factors affecting the practice of preventive measures to COVID-19 among nurses; hence. the need for this study is unequivocal, especially now that the whole universe is in fight against a common enemy which the only way out so far is to prevent the disease as there is no available cure or vaccine yet. This research study, therefore, assessed perception and factors affecting the practice of preventive measures of COVID-19 among nurses in tertiary hospitals in Anambra State, Southeastern Nigeria.

Materials and Methods

Research design and setting
The study's design was a descriptive cross-sectional survey, which was used in a similar study by Zhong *et al*.[12] The researchers conducted the study in two tertiary health institutions: Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, and Chukwuemeka Odimegwu Ojukwu University Teaching Hospital (COOUTH), Awka, all in Anambra State, Southeast, Nigeria.

Study participants and sampling
The study's population comprises all the registered nurses working in COOUTH, Awka (170) and NAUTH, Nnewi (498), which is a total of 668 nurses. The sample size calculation was done using the Cochran[13] formula for calculating sample size, resulting in the selection of 344 nurses; 121 from COOUTH, Awka and 223 from NAUTH, Nnewi. The use of a multistage sampling technique was in two stages. The first stage involved the use of proportionate sampling to allocate the number of nurses in COOUTH, Awka and NAUTH, for inclusion and proper representation in the study. After that, a simple random sampling method was used for selection till we attained the required sample size for each unit.

Instrument for data collection
The instrument for data collection was self-administered, structured questionnaire. The questionnaire has four sections with a total of forty items. Section A contains six items which was used to elicit information on demographic profile of the participants, Section B contains 11 items used to elicit information on the

perception of the nurses toward COVID-19, Section C contains 10 items used to elicit information on perceived benefits of COVID-19 preventive measures among nurses, and Section D contains 13 items which was used to elicit information on factors affecting the practice of preventive measures to COVID-19 among the nurses.

Validity of the instrument
The questionnaire's validation was by research experts consisting of a microbiologist, health educationist, and medical statistician for the evaluation of the appropriateness of the content of the survey instrument. After the validation, the researchers used the validators comments to adjust the instrument before using it for data collection.

Reliability of the instrument
For reliability, We equally conducted a pilot study using thirty randomly selected nurses at University of Nigeria Teaching Hospital, Enugu, by the test–retest method to ascertain the reliability of the instrument. The researchers subjected the data generated from the pilot study to Cronbach alpha reliability test, and reliability coefficient (*r*) of 0.87 obtained. This result showed that the instrument is reliable.

Ethical consideration
Ethical standard guiding the conduct of research involving human was maintained. Ethical approval was obtained from the Institute Research Ethics Committee of Nnamdi Azikiwe University Teaching Hospital with ethical code NAUTH/CS/66/VOL. 13/VER 111/50/2020/035. Informed consent was obtained from all participants under the study. The participants were explained about the expected duration of participation, maintenance of confidentiality of records, the right to withdraw from the study at any point of time, and voluntary participation. Confidentiality of the data and anonymity of the subjects were maintained throughout the study.

Data collection
Data were collected until we attained the required sample size from the two tertiary institutions COOUTH, Awka and NAUTH, Nnewi with the aid of a structured questionnaire. The questionnaire was administered to the participants to obtain information on sociodemographic characteristics like age, sex, marital status, religion, qualification, cadre and years of experience. Also, perception and factors influencing practice of preventive measures to Covid-19 was assessed among the respondents.

Data analysis
Analysis of the data results was through the use of tables, charts, and mean percentages based on the research questions for ease of interpretation. The data analyses were with the aid of Statistical Package for the Social Sciences (SPSS) version 24 which was manufactured by IBM software company at Stanford, Chicago.

Results
Table 1 shows that 214 (62.2%) respondents are within the age of 26–35 years, 324 (94.2%) are females, 265 (77%) are married, 339 (98.5%) are Christians, 240 (69.7%) are RN/RM (double qualified), 153 (44.5%) are SNOs, and 96 (26.7%) are NOs. Years of experience for 197 (57.3%) of the nurses are 11–20 years.

Figure 1 shows that most (88.1%) of the nurses in the hospitals had no formal training on COVID-19.

Table 2 shows the perception of nurses with regard to COVID-19. One hundred and sixty-five (48.0%) of them perceived the disease as being highly contagious, 207 (60.2%) of them viewed the symptoms as those that are recognised easily, 201 (58.4%) perceived that

Table 1: Sociodemographic characteristics of the respondents

Variable	Frequency (%)
Age category (years)	
18-25	48 (14.0)
26-35	214 (62.2)
36-45	61 (17.7)
46 and above	21 (6.1)
Mean age (years)	45.2±6.1
Sex	
Male	20 (5.8)
Female	324 (94.2)
Marital status	
Married	265 (77.0)
Single	53 (15.4)
Widow	17 (4.9)
Divorced/separated	9 (2.6)
Religion	
Christian	339 (98.5)
Islam	2 (0.6)
Traditional	3 (0.9)
Qualification/level of education	
RN/RM	240 (69.7)
B.SCN	96 (27.9)
MSN/PhD nursing	8 (2.3)
Cadre	
NO 11	37 (10.8)
NO 1	92 (26.7)
SNO	153 (44.5)
PNO	24 (7.0)
ACNO-ADNS	38 (11.0)
Years of experience	
1-10	115 (33.4)
11-20	197 (57.3)
21-30	32 (9.3)

eating well will not make one contract the disease, 168 (48.8%) viewed that COVID-19 can be handled professionally based on their experience, 155 (45.1%) perceived that there is no vaccine yet for the disease, and 200 (58.1%) of them viewed that patients should not hide their symptoms and travel history to avoid infecting other people. Although 182 (52.9%) nurses disagree that COVID-19 does not exist, 185 (53.8%) saw it as not existing in Nigeria, 214 (62.2%) agreed that herbal products prevent the disease, and 175 (50.9%) agreed that taking hot liquid can expel the virus. On the overall, majority of the nurses had a good perception of COVID-19.

Table 3 shows the perceived benefits of COVID-19 preventive measures among respondents. The result from 323 (93.9%) nurses shows it as a falsehood that COVID-19 preventive measures will predispose one to the disease, 319 (92.7%) expressed that the measures will not slow the spread of the disease, 288 (83.7%) expressed that the measures are independent of normalcy returning to the affected areas, 327 (95.1%) of them expressed that the measures will not effectively prevent the virus from spreading to the vulnerable, 311 (90.4%) expressed that COVID-19 preventive measures will not ensure compliance among the nurses and other health workers,

335 (97.4%) of them expressed that the measures will not protect their family and colleagues from contracting the infection, and 299 (86.9%) of the nurses expressed that COVID-19 deaths are not dependent on whether the transmission is cut off through appropriate preventive strategies. On the other hand, 196 (57.0%) nurses reported that COVID-19 preventive measures would help to correct misconceptions about the disease, 339 (98.5%) expressed that the measures will improve the continuous
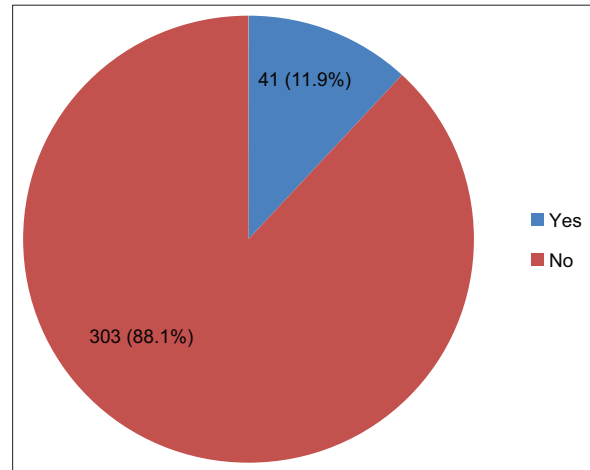

Figure 1: Trained (frontline) nurses for COVID-19

Table 2: Perception of nurses towards COVID-19

Questions	Agree	Strongly agree	Disagree	Strongly disagree
1. COVID-19 is not in existence	38 (11.0)	0 (0.0)	182 (52.9)	124 (36.0)
2. COVID-19 is not in Nigeria yet	38 (11.0)	4 (1.2)	185 (53.8)	117 (34.0)
3. COVID-19 is highly infectious and contagious	165 (48.0)	110 (32.0)	38 (11.0)	31 (9.0)
4. Patients with COVID-19 symptoms are easily recognized	207 (60.2)	96 (27.9)	13 (3.8)	28 (8.1)
5. Eating well will not make one contact COVID-19	201 (58.4)	68 (19.8)	53 (15.4)	22 (6.4)
6. Herbal products prevent COVID-19	31 (9.0)	18 (5.2)	214 (62.2)	81 (23.5)
7. COVID-19 can be handled professionally with my experience	168 (48.8)	112 (32.6)	29 (8.4)	35 (10.2)
8. COVID-19 has no treatment or vaccine	155 (45.1)	124 (36.0)	29 (8.4)	36 (10.5)
9. Patients should not hide symptoms and travel history to keep others safe	200 (58.1)	136 (39.5)	6 (1.7)	2 (0.6)
10. Taking hot liquids expels the virus from one's system	14 (4.1)	31 (9.0)	175 (50.9)	124 (36.0)
11. COVID-19 is comparable to any other disease in terms of mortality rate	61 (17.7)	42 (12.2)	143 (41.6)	98 (28.5)

Table 3: Perceived benefits of COVID-19 preventive measures among respondents

Questions	True	False
1. Practising COVID-19 preventive measures will predispose one to the infection	21 (6.1)	323 (93.9)
2. Practising COVID-19 preventive measures will not slow the spread of the virus	25 (7.3)	319 (92.7)
3. Practising COVID-19 preventive measures or not is independent of normalcy returning to areas affected	56 (16.3)	288 (83.7)
4. It will not effectively prevent the virus from spreading to the vulnerable	17 (4.9)	327 (95.1)
5. It will help to correct misconceptions about the disease	196 (57.0)	148 (43.0)
6. Practising COVID-19 preventive measures will improve the continuous professional development education on COVID-19 among the nurses	339 (98.5)	5 (1.5)
7. Practising COVID-19 preventive measures will not ensure compliance among the nurses and other health workers	33 (9.6)	311 (90.4)
8. It will not protect my family and colleagues from contracting the infection	9 (2.6)	335 (97.4)
9. COVID-19 deaths are not dependent on whether the transmission is cut off through appropriate preventive strategies	45 (13.1)	299 (86.9)
10. Presently, practising COVID-19 preventive measures is amongst the effective ways to mitigate the disease and enhance life sustainability	327 (95.1)	17 (4.9)

professional development education on COVID-19 among the nurses, and 327 (95.1%) of them expressed that COVID-19 preventive measures are among the effective ways to mitigate the disease and enhance life sustainability.

Table 4 shows the factors that influence the practice of preventive measures to COVID-19 among nurses. On the work-related factors, time to use personal protective equipment (PPE) in an emergency (170 [49.4%]), remembering to use PPE (158 [45.9%]), insufficient nursing staff during a shift (158 [43.0%]), too many responsibilities during a shift (178 [51.7%]), lack of PPE in their unit (157 [45.6%]), PPE not readily available in the unit (161 [46.8%]), lack of sufficient training on the use of PPE (158 [45.9%]), inadequate experience and relevant knowledge on the use of PPE, and routine nonuse of PPE (161 [46.8%]) are some of the work-related factors that influence their practice of preventive measures to COVID-19. However, they (132 [38.4%]) disagreed that unavailability of water, soap, and hand sanitizers to perform hand hygiene is a factor. On the psychosocial and disease-specific factors, not disposed or like the use of PPE (225 [65.4%]), difficulty in breathing due to prolonged use of a mask (161 [46.8%]), preference to wear PPE only when its use is necessary (216 [62.8%]), unhealthy work environment due to the present pandemic (123 [35.8%]),

direct contact with COVID-19 patients (149 [43.3%]), the anxiety of being infected as COVID-19 is highly infectious (205 [59.6%]), and unavailability of vaccine (196 [57.0%]) were the nurses' views. However, they disagreed to availability of incorrect PPE sizes in the unit (170 [49.4%]), feeling uncomfortable and irritable when wearing PPE (134 [39.0%]), negative impact on the appearance and damage to the makeup (236 [68.6%]), feeling of emotional distance from the patient when putting on PPE (236 [68.6%]), strange look and feelings from patients relatives when wearing PPE (197 [57.3%]), and poor likelihood of acquiring the disease since am physically fit (161 [46.8%]).

Discussion

On the perception of the nurses with regard to COVID-19, the nurses had a good perception of the disease as they perceived the disease to be highly contagious that the symptoms are recognized easily from what they have learned so far. They also believed that COVID-19 could be handled professionally based on their experience of previous pandemics. Therefore, they feel they are capable of handling the disease as discovered by Hashmi *et al.*[10] in a similar study. The nurses in the study disagreed that eating well will not make one contact the disease; herbal products and hot

Table 4: Factors influencing the practice of COVID-19 preventive measures among the respondents

Questions	Agree	Strongly agree	Disagree	Strongly Disagree
Work-related/institutional factors				
1. Time to use PPE in an emergency	149 (43.3)	170 (49.4)	13 (3.8)	12 (3.5)
2. Remembering to use protective equipment in an emergency	144 (41.9)	158 (45.9)	38 (11.0)	4 (1.2)
3. Insufficient nursing personnel during shifts	158 (43.0)	138 (36.0)	36 (10.5)	12 (3.5)
4. Too many responsibilities during shifts	102 (29.7)	178 (51.7)	49 (14.2)	15 (4.4)
5. Lack of PPE in my unit	157 (45.6)	99 (28.8)	61 (17.7)	27 (7.8)
6. Unavailability of PPE readily in my unit	161 (46.8)	31 (9.0)	97 (28.2)	55 (16.0)
7. Unavailability of water, soap and hand sanitisers to perform hand hygiene	12 (3.5)	107 (31.1)	93 (27.0)	132 (38.4)
8. Lack of sufficient training on the use of PPE	142 (41.3)	158 (45.9)	41 (11.9)	3 (0.9)
9. Inadequate experience and knowledge on the use of PPE	144 (41.9)	148 (43.0)	41 (11.9)	11 (3.2)
10. Routine nonuse of PPE in my unit	77 (22.4)	161 (46.8)	74 (21.5)	32 (9.3)
Psychosocial and disease-specific factors				
1. Availability of incorrect PPE sizes in my unit	19 (5.5)	0 (0.0)	155 (45.1)	170 (49.4)
2. Not personally disposed or like the use of PPE	103 (29.9)	225 (65.4)	16 (4.7)	0 (0.0)
3. Feeling uncomfortable and irritable when wearing PPE	92 (26.7)	7 (2.0)	111 (32.3)	134 (39.0)
4. Difficulty in breathing due to prolonged use of mask since nurses use the mask for aseptic procedures	161 (46.8)	85 (24.7)	87 (25.3)	11 (3.2)
5. Preference to wear PPE when its use is necessary	216 (62.8)	109 (31.7)	19 (5.5)	0 (0.0)
6. Negative impact on my appearance and damage to my make up	91 (26.5)	13 (3.8)	236 (68.6)	4 (1.2)
7. Feeling of emotional distance from my patient when putting on PPE	84 (24.4)	48 (14.0)	236 (68.6)	4 (1.2)
8. Strange look and feelings from patient relatives when they see me on PPE	37 (10.8)	8 (2.3)	197 (57.3)	102 (29.7)
9. Poor likelihood of acquiring the disease since I am physically fit	70 (20.3)	107 (31.1)	161 (46.8)	6 (1.7)
10. Unhealthy work environment due to the presence of the pandemic	123 (35.8)	111 (32.3)	102 (29.7)	8 (2.3)
11. Direct contact with COVID-19 patients	125 (36.3)	149 (43.3)	55 (16.0)	15 (4.4)
12. The anxiety of being infected as COVID-19 is highly infectious	205 (59.6)	100 (29.1)	24 (7.0)	15 (4.4)
13. Unavailability of drugs and vaccine for COVID-19 treatment	196 (57.0)	114 (33.1)	12 (3.5)	22 (6.4)

PPE=Personal protective equipment

liquids can prevent one from getting the virus owing to the high susceptibility nature of the disease;[9] hence; the need for adherence to the recommended universal preventive measures[3,5] to reduce the increasing death toll as a result of the disease**.**[2] There is fear among the nurses of contracting the disease as no vaccine or cure is yet proven scientifically for the disease[11] although there are ongoing medical treatments for the infected patients[14] which has not proven to be 100% efficacious and many of the Nigerian patients hide their symptoms and travel history to avoid being rejected by the hospital when they come for treatment.

The perceived benefits of the COVID-19 preventive measures are quite enormous as that is the only way presently to prevent predisposing them to the disease and slow the spread.[3] It is on this premise that the nurses disagreed that COVID-19 preventive measures are independent of normalcy returning to areas affected, will not protect the family and colleagues from contracting the infection, will not ensure compliance among the nurses and other health workers, and will not effectively prevent the virus from spreading to the vulnerable especially health workers that are always in contact with patients including COVID-19 patients. There is the need for a positive attitude and adequate knowledge[5] to get the maximal benefit of COVID-19 preventive measures with centring on learning healthy habits[7] as no cure has been discovered so far for the disease. Similarly, the nurses disagreed that COVID-19 deaths are not dependent on whether the transmission is cut off through appropriate preventive strategies, hence the need to practice appropriate preventive strategies which are capable of cutting off the transmission, thereby reducing the increasing death toll due to the disease. On the other hand, the nurses reported that COVID-19 preventive measures would help to correct misconceptions about the disease, especially in Nigeria. Many of the Nigerian populace believe there is no COVID-19 case in Nigeria which may be as a result of no confidence in the organization.[9] Hence, the need for appropriate knowledge to correct the misconceptions of seeing it as a political propaganda through relevant information dissemination which is also a veritable tool to improve the continuous professional development education on COVID-19 among the nurses. COVID-19 preventive measures are among the effective ways to mitigate the disease and enhance life sustainability. It is, therefore, pertinent to effectively practice the appropriate recommended preventive measures to COVID-19 to reap the maximum benefits associated with it as the only approved means of preventing the spread of the disease,[15] as the effort to discover a permanent cure is still in progress.

On the factors that influence the practice of preventive measures to COVID-19 among nurses, the result was divided into work-related/institutional factors and psychosocial and disease-specific factors. On the work-related factors, the nurses strongly agreed with "time to use PPE in an emergency" and "remembering to use PPE," especially in an emergency as some COVID-19 patients do come in as emergency without the nursing staff being sure of the diagnosis. Hence, there is the need to be prepared and always ready to respond to an outbreak, in particular, the one due to COVID-19.[16] Therefore, there is the need to follow appropriate practices[5] and to isolate and suspect any case that comes to the hospital until proven otherwise,[17] despite the lack of time and insufficient personnel as reported by Efstathiou *et al.*[18] in a similar study. In the same vein, insufficient nursing staff and too many responsibilities during a shift, lack of PPE in their unit, PPE not readily available in the unit, lack of sufficient training on the use of PPE, inadequate experience and relevant knowledge on the use of PPE, and routine nonuse of PPE are some of the work-related factors that influence their practice of preventive measures to COVID-19. Inadequate PPE was also in the reported study by Aurang *et al.*[19] and lack of resources by Li *et al.*[20] They disagreed on the unavailability of hand hygiene material, suggesting that hand hygiene materials are readily available. This material availability is essential to prevent the infection of other patients as nurses should observe all the moments of handwashing as recommended by the WHO. Against this backdrop, however,[6] saw a lack of water and the unhealthy environment as factors that influence the practice of preventive measures to COVID-19. On the psychosocial and disease-specific factors, they agreed with "not disposed or like the use of PPE always", and "difficulty in breathing due to prolonged use of a mask." Instead, they preferred to wear PPE only when its use is necessary despite the unhealthy work environment due to the present pandemic and their direct contact with COVID-19 patients most times. The above claim is because nurses are always in contact with patients including COVID-19 patients.[21] The anxiety of being infected because COVID-19 is highly infectious is one of the factors that the majority reported due to the unavailability of vaccine or cure for the disease so far. According to Haskell *et al.*,[22] health-care workers globally are experiencing an unprecedented level of anxiety for their health and safety of coworkers and family. They were more concerned about infecting their family members.[23] The nurses did not see "availability of incorrect PPE sizes in the unit, feeling uncomfortable and irritable when wearing PPE, negative impact on the appearance and damage to the makeup, feeling of emotional distance from the patient when putting on PPE, strange look and feelings from patients relatives when they see me on PPE", and "poor likelihood of acquiring the disease since am physically fit" as factors that influence their practice of preventive measures

to COVID-19. Hence, it is vital to observe all the precautionary measures and not to live as if it is still the same usual way of working without much precaution. Trivializing the importance of these preventive measures is one of the biggest mistakes that could lead to the spread of the disease.[7,24] Despite that negative influence of PPE on nurses and some other psychological factors were reported by Chan[25] in their study, which is not the case in the present study, there is a need for improved knowledge through sufficient training in order to enhance compliance to the preventive measures to COVID-19 and stop all the improper practices that may spread the infection.

The study is novel as related literature searched showed no study has considered the factors affecting the practice of preventive measures to COVID-19 among nurses. Majority of the previous studies reviewed considered practice of preventive measures to coronavirus infections, knowledge of the deasease among nurses, attitude, and also anxiety of nurses toward the disease. None of the studies reviewed considered exactly the topic under discussion although Maysa *et al*. in 2017 conducted a study on factors influencing compliance with the infection control precautions among nurses and physicians which was not related to COVID-19 in anyway, hence the need for this study cannot be overemphasized as this is a hospital-based study involving the main health-care workers involved the battle against COVID-19 and the most closest to the patients at all times. This study is new as it has not been carried out by most researchers especially in the State where the study was carried out. It is a hospital based study and therefore will fill the gap in Knowledge which previous studies have not been able to fill.

Limitation and recommendation

The major limitation to the study was concerning paucity of indigenous literature on the subject area. Also, to get the participant's cooperation in other to collect data was a bit challenging due to the Covid-19 pandemic. The researchers therefore recommended adequate consideration of these factors that influenced the practice of preventive measures to Covid-19 by health care stakeholders especially on the issue of PPE provision for the nurses and other health workers in other to protect them from beign infected and also maintain a healthy workforce.

Conclusion

COVID-19 is a dreaded disease that poses grave danger to the human population globally. Many frontline health workers, including nurses, are knowledgeable about the disease and many have acquainted themselves with the knowledge and practice of the preventive measures which is essential in cutting the transmission and stopping the spread of the disease. It is, therefore, necessary to ensure the provision of the tools needed to prevent the spread of and deaths from the disease among health workers. Such tools will help to eliminate all the negative factors that may expose them to the infection.

References

1. WHO. Coronavirus Disease (COVID-19) Advice for the Public: Myth Busters Section Navigation; 2020. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advicee-for-public/myth-busters. [Last accessed on 2020 May 11].
2. Worldometer. Death Toll from COVID-19; 2020. Available from: https://www.worldometers.info/coronavirus/coronavirus-death-toll/. [Last acessed on 2020 Jul 09].
3. WHO. Coronavirus Disease (COVID-19) Advice for the Public: Basic Protective Measures Against the New Coronavirus; 2020. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public [Last accessed on 2020 May 11].
4. NCDC. Public Health Advisory to Nigerians on Coronavirus Disease; 2020. Available from: https://ncdc.gov.ng/news/244/18th-march-2020%7C-public-health-advisory-to-nigerians-on-coronavirus-disease-%28%236%29. [Last accessed on 2020 May 09].
5. Zhang M, Zhou M, Tang F, Wang Y, Nie H, Zhang L, *et al*. Knowledge, attitude, and practice regarding COVID-19 among healthcare workers in Henan, China. J Hosp Infect 2020;105:183-7. doi: 10.1016/j.jhin. 2020.04.012.
6. Maysa N, Maha S, Mahmoud A (2017). Factors influencing compliance to the infection control precautions among nurses and physicians in Jordan: A cross-sectional study. *Journal of Infection Prevention*, 18(4). https://doi.org/10.1177/1757177417693676
7. Kavookjian J. Learning Healthy Habits Is Vital in the Time of COVID-19. Auburn's Harrison School of Pharmacy; 2020. Available from: https://ocm.auburn.edu/experts/2020/04/070958-healthyhabits-covid19.php. [Last accessed on 2020 May 20].
8. Orabi E. Standard isolation precautions educational intervention on undergraduate medical students of Zagazig University. Zagazig Univ Med J 2017;23:1-14. DOI: 10.21608/zumj. 2017.4699
9. Zegarra-Valdivia J, Chino Vilca BN, Ames-Guerrero RJ. Knowledge, attitudes, and perception susceptibility towards the COVID-19 pandemic in Latin American region. 2020. Psyarxiv Preprints.doi: 10.31234/osf.io/w9y6z].
10. Hashmi FK, Iqbal Q, Haider S, Din Ahmed F, Saleem F, Bashaar M. Response to and perception of nurses during the COVID-19: A qualitative assessment. Infect Dis 2020; Research Square Preprint.[Doi: 10.21203/rs. 3.rs-26270/v1].
11. Parikh PA, Shah BV, Phatak AG, Vadnerkar AC, Uttekar S, Thacker N, *et al*. COVID-19 Pandemic: Knowledge and

perceptions of the public and healthcare professionals. Cureus 2020;12:e8144. doi: 10.7759/cureus.8144

12. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, and Yi L. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. Int J Biol Sci 2020;16:1745-52. doi: 10.7150/ijbs.45221.

13. Cochran WG. Sampling Techniques. 3rd ed. New York: John Wiley & Sons; 1977.

14. Bikdeli B, Talasaz AH, Rashidi F, Sharif-Kashani B, Farrokhpour M, Bakhshandeh H, *et al*. Intermediate versus standard-dose prophylactic anticoagulation and statin therapy versus placebo in critically-ill patients with COVID-19: Rationale and design of the Inspiration/Inspiration-S studies. Thromb Res 2020;196:382-94. doi: 10.1016/j.thromres.2020.09.027.

15. Public Health England. Reducing the Risk of Transmission of COVID-19 in the Hospital Setting; 2020. Available from: https://www.gov.uk/government/publications/ wuhan-novel-coronavirus-infection -prevention-and-control/ reducing-the-risk-of-transmission-of-covid-19 -in-the-hospital-setting7. [Last accessed on 2020 May 14].

16. WHO. Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19); 2020. Available from: https:// openwho.org/courses/COVID-19-IPC-EN. [Last accessed 2020 May 08].

17. WHO. Environmental Health in Emergencies; 2020. Available from: https://www.who.int/environmental_health_emergencies/ disease_outbreaks/communicable_diseases/en/. [Last accessed on 2020 May 16].

18. Efstathiou G, Papastavrou E, Raftopoulos V, Merkouris A. Factors influencing nurses' compliance with Standard Precautions in order to avoid occupational exposure to microorganisms: A focus group study. BMC Nurs 2011;10:1. doi: 10.1186/1472-6955-10-1.

19. Pearce L. How COVID-19 is affecting nurses' mental health and what to do about it. Nursing Standard Publication, by Royal College of Nursing UK. 2020, 36(1). Available from: https://rcni.com/nursing-standard/features/ how-covid-19-affecting-nurses-mental-health-and-what-to-do -about-it-159456. [Last accessed on 2020 Apr 30].

20. Aurang Z, Dildar M, Awal K. Factors Affecting Nurses' Compliance to Standard Precautions in Resource Scarce Settings. Am J Biomed Sci & Res. 2018-4(5). DOI: 10.34297/ AJBSR.2019.04.000840.

21. Li Z, Ge J, Yang M, Feng J, Qiao M, Jiang R, *et al*. Vicarious traumatisation in the general public, members, and non-members of medical teams aiding in COVID-19 control. Brain Behav Immun 2020;88:916-9.

22. Haskell B, Schroer M, Zsamboky M. Easing the psychological impact of COVID-19 for nurses. Am Nurse Today Nurseline. 2020. Available from: https://www.myamericannurse.com/ easing-the-psychological-impact-of-covid-19-for-nurses/[Last accessed on 2020 May 18].

23. Nemati M, Ebrahimi B, Nemati F. Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran. Arch Clin Infect Dis 2020;15:e102848.

24. European Centre for Disease Prevention and Control. COVID-19 Situation Update Worldwide As of May 9, 2020. Available from: https://www.ecdc.europa.eu/en/ geographical-distribution-2019-ncov-cases. [Last accessed on 2020 May 09].

25. Chan MF. Factors affecting the compliance of operating room nursing staff toward standard and transmission-based precautions in an acute care hospital. Am J Infect Control 2010;38:666-7.