



KNOWLEDGE AND PRACTICE OF SAFE CLINICAL MANAGEMENT OF COVID-19 AMONG NURSES IN SELECTED HOSPITALS IN ONDO STATE, NIGERIA

¹Mary Idowu Edward, ²Taiwo Adebayo Olomiye, ³Emily Kofoworola Adehanloye,
⁴Folakemi Beatrice Adumaza, ⁵Funmi Racheal Ikuesan

¹Senior Lecturer, ²Lecture II, ³Deputy Director of Nursing Service, ⁴Lecturer II, ⁵Superintendent Nursing Officer
¹Department of Adult and Mental Health Nursing

¹Faculty of Nursing Science, University of Medical Sciences, Akure Campus, Akure, Ondo State, Nigeria

International Research Journal

Abstract : Clinical management of COVID-19 is very dynamic at the moment and this is guided by general principles of management of respiratory illnesses. This study assesses the knowledge of nurses on safe clinical management of Covid-19, knowledge of nurses on infection prevention and control (IPC), the practice of nurses on management of Covid-19 in Ondo State and factors affecting practice of safe clinical management of Covid 19 in Ondo State. The population of interest in this study were all nurses in the three (3) selected hospitals in Ondo State, with sample size of 100. Four research questions were posed and two hypothesis were formulated. The data was collected through the use of researcher's designed questionnaire and same analyzed using the IBM SPSS version 23 computer statistical software package, mean and standard deviation, while categorical variables were analysed using frequencies and percentages. Pearson Product Moment Correlation statistical method was used to determine statistical significance of association between categorical variables at 5% probability level and statistical significance will be set at $p < 0.05$. The findings revealed that there is a significant relationship between knowledge of nurses on safe clinical management of Covid-19 and years of experience ($p=0.001$) and there is significant relationship between knowledge and practices of nurses on safe clinical management Covid-19 in Ondo State ($p=0.001$). It was concluded that job stress, staff and resource adequacy and turnover, inadequate of personnel, fear of COVID-19 infection, availability and accessibility of personal protective equipment, lack of training on infection practice and control (IPC), insincerity of patients and relative, inadequacy of equipment, availability of diagnostic materials and lack of motivation from the management to the nurses are factors affecting practice of safe clinical management of Covid 19 in Ondo. Continuous provision of PPE and training of all nurses on proper infection prevention measures is therefore recommended.

IndexTerms - Knowledge, Practice, Nurses, Clinical management, Covid-19

INTRODUCTION

The novel coronavirus also referred to as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) causes a severe respiratory disease known as coronavirus disease (COVID-19) (Abdelhafiz et.al, 2020, Shrikrushna et.al, 2020). COVID-19 was first reported in a hospital in Wuhan city, the capital of Hubei Province, China on 29th December 2019. Subsequently, the disease spread rapidly throughout the country. The first case of COVID-19 out of China was confirmed in Thailand on 13th January 2020. COVID-19 was first reported by the World Health Organization (WHO) on the 31st December 2019 and announced as a global pandemic on 11th March 2020 (WHO, 2020). The contagious virus began its ravaging effect from Wuhan, Hubei Province, China and then around the world (Abdelhafiz et.al, 2020, Center for Disease and Control, CDC, 2020), except Antarctica (Shallie & Haffejee, 2022). The surge of COVID-19 in Wuhan, China led to the closure of public places, halting of public transportation, isolation and management of infected persons, all in a bid to curb the spread of SARS-CoV-2 (Zhong, 2020). The clinical presentation of COVID-19 symptoms include fever, fatigue, dry cough, malaise and breathing difficulty (Abdelhafiz et.al, 2020). So far, the disease is characterized by high morbidity and mortality rates (Roy, Tripathy, Kar et.al, 2020) alongside other ailments. The shutting down of social activities throughout the world to mitigate the spread of the pandemic has led to a global lockdown, causing a downturn and global economic fall due to a break in the global supply chain (Wang, Horby, Hayden & Gao, 2020).

Prior to the WHO pronouncement of COVID-19 as a global public health challenge and pandemic, many Nigerians regarded the disease as a distant white man's infirmity that could never spread to their abode. Without recourse to expert advice and recommendations, Nigerians and their government downplayed the emergence of COVID-19 in their territory thereby hesitating the adoption of initial

preventive measures which would have saved costs while protecting the citizenry from undue exposure to the virus. With the confirmation of the index COVID-19 case in Lagos, Nigeria on February 27, 2020, other parts of the country including the Ondo State continued their normal routines and social activities without observing the sketchy preventive measures initially outlined by Nigeria Centre for Disease Control (NCDC, (2020). The public opinion within central Nigeria was that COVID-19 is a “big man disease” (i.e. disease of the highly influential persons). As the number of COVID-19 cases gradually rises among the Nigerian population, mainly of metropolitan areas including Abuja, the Federal Capital Territory (FCT) situated in central Nigeria, unfound uncertainties, palpable fear amidst misinformation regarding COVID-19 characterized the state of the inhabitants of the region.

In Nigeria, Covid-19 was first reported in Lagos and then in the capital Abuja. The Nigerian government, like other global community, adopted measures to contain the spread of the disease. Some of the strategies implemented included social distancing, ban on public gathering including religious gatherings, continuous personal hygiene such as hand washing and use of hand sanitizers; use of face masks, limiting number of passengers in public vehicles, locking down public places and cities. However, compliance with these measures was variable and largely dictated by economic factors.

Furthermore, the prevailing presence of urban slums, dense population, inadequate access to potable water, fragile healthcare system, sharing of sanitation facilities with a high degree of social mixing among the inhabitants of Ondo State will make the implementation of hygiene and other public health measures necessary for the curbing of the coronavirus impossible (Makoni, 2020). Also, the spread of misinformation and tales regarding the COVID-19 and promotion of unscientific traditional treatment within the central Nigerian further jeopardized the implementation of preventive measures (Ioannidis, 2019, Reuben, 2021). Government inability to sustain the social distancing policy and ban on large gatherings including religious and cultural activities, funerals, weddings and sports may undoubtedly create accelerated COVID-19 super-spreading scenarios (Wong, Liu, Liu & Zhou, 2020). For effective control and mitigation of COVID-19 actional and timely epidemiological data generated from the populace will inform health authorities to design robust interventions and policies that are relevant and comprehensible.

Evidence shows that proper infection prevention and control (IPC) measures during outbreak management could change the course of the outbreak (El Bushra, 2017). However, the current IPC behaviors are far from optimal. A study on the Lassa Fever outbreak among Health care workers (HCWs) showed that none of the study participants met the minimum standards of infection prevention practices during the rest contact with fever cases (Ijarotimi&Ilesanmi, 2018). Infection prevention and control behaviors are influenced by factors such as the occurrence of an epidemic, contact with confirmed and suspected cases, key clinical departments (such as intensive care unit and emergency department) that are critical risk factors in the pandemic outbreak and always cited as important causes of high healthcare-associated prevalence worldwide(Lie et al 2020).

COVID-19 in majority of the population (80%) presents as an asymptomatic or mild infection. However, the disease is known to cause severe pneumonia and multiple complications, especially in certain high-risk groups. These remaining 20 per cent of infected patients will need admission and hospital care, including five per cent of them who require intensive care and ventilator support. Multiple protocols and management strategies are currently being developed worldwide to overcome this issue. However, in resource-limited settings like Nigeria which deal with a huge population base, it is critical for the nurses to be well equipped to speedily identify and treat patients who require admission and critical care. This will ensure proficient utilization of resources and facilities available without overburdening the existing healthcare system. Thus, an attempt was made to summarize the safe clinical management of COVID-19 among nurses.

Research Through Innovation

NEED OF THE STUDY.

Statistics about Covid-19 are frightening and alarming. According to the World Health Organization (WHO), the outbreak of coronavirus disease 2019 (COVID-19) has become a pandemic, which at the time of writing had affected more than 63,228,544 people and caused more than 1,476,277 deaths and 44,079,695 recovered worldwide.

In Nigeria, Covid-19 was first reported in Lagos and then in the capital Abuja. The Nigerian government, like other global community, adopted measures to contain the spread of the disease. Some of the strategies implemented included social distancing, ban on public gathering including religious gatherings, continuous personal hygiene such as hand washing and use of hand sanitizers; use of face masks, limiting number of passengers in public vehicles, locking down public places and cities. However, compliance with these measures was variable and largely dictated by economic factors.

The health workers are extremely strained during the course of any pandemic because of their role as key players in response to a pandemic. They are the primary sector that has contact with patients and are prone to exposure to infected cases in healthcare settings. By their professional obligation, they must be at their workplaces even if their health is at risk. Nevertheless, nurses should be trained in the clinical management of this rapidly spreading viral illness to enable them to swiftly and confidently detect and treat all infected individuals. It is of paramount importance that Nurses are actively involved in infection control and provided adequate personal protective equipment to safeguard not only themselves but those surrounding them as well. This study was designed to assess the level of preparedness of nurses in Ondo State on knowledge and practice of clinical management of COVID-19 pandemic.

RESEARCH METHODOLOGY

3.1 Population and Sample

This study was conducted using descriptive cross sectional design. The research was conducted at three (3) health facilities in Ondo State. University of Medical Science Teaching Hospital Complex, Ondo, is one of the State own tertiary health care centre located at Laje Road, Ondo, Ondo State had 153 nurses. State Specialist Okitipupa, located along Ayeka road Okitipupa in Okitipupa local

government area of Ondo State with 59 nurses and General Hospital Igbokoda, located along Omaniran road Igbokoda in Ilaje local government area of Ondo State had 21 nurses. Altogether 233 nurses were there during the period of this research.

$$\text{Using the formula : } n = \frac{N}{1 + N(e)^2}$$

Where; N = 233

e = Limit of tolerable error, for this study 0.05 is acceptable

l= Constant

n= Desired sample size

$$n = \frac{233}{1 + 233(0.05)^2}$$

$$n = \frac{233}{1 + 233(0.0025)}$$

$$n = \frac{233}{1 + 1.33}$$

$$n = \frac{233}{2.33} = \underline{\underline{100}}$$

The sample size for this study consisted of 100 nurses selected from the total population using the simple random sampling technique.

3.2 Data and Sources of Data

A self-structured questionnaire was adopted for the study. It made up of five (5) sections to elicit responses from the respondents. Data was analyzed using SPSS version 23 (SPSS Inc., Chicago, IL). Descriptive statistics was used in summarizing the data and Pearson Product Moment Correlation statistical method was used to determine statistical significance of association between categorical variables at 5% probability level and statistical significance will be set at $p < 0.05$. Ethical approval for the study was obtained from the ethical review board of Ondo State Ministry of Health, Akure. Permission to conduct the study was obtained from the management of the hospital and heads of the respective departments in charge of the clinics where data collection was done; informed consent was also obtained from the study participants before data collection. Anonymity was maintained to enhance confidentiality.

3.3 Theoretical framework

Theoretical framework of Health Belief Model (HBM) was used for the study.

Perceived Susceptibility: Belief of one's chance of getting a condition. Health workers perceive they are at risk and susceptible to nosocomial infections. **Perceived severity:** One's beliefs of how serious a condition and its consequences. Health workers believe that the consequences of getting infected are significant enough to try to avoid. **Perceived benefits:** One's beliefs in the efficacy of the advised action to reduce the risk or seriousness of impact. Health workers perception or belief that the recommended action of standard precaution will prevent them from getting infected. **Perceived Barriers:** One's belief in the tangible and psychological costs of the advised behaviors. These include perceived health workers barriers to the use of standard precaution (lack of time, interference with procedures, lack of availability and accessibility of standard precaution materials). **Cues to Action:** Strategies to activate readiness. These are events that encourages the use of standard precaution guidelines among the health workers. age, level of knowledge, year of experience etc.). **Self-efficacy:** Confidence in one's ability to take actions

Health workers ability to use and carry out standard precaution in every procedure they carry out

IV. RESULTS AND DISCUSSION

4.1 Sociodemographic characteristics: complete data was obtained from 100 respondents. Mean age was 36.3 years (31 – 40 years). 39(39%) of the respondents had only RN, 31(31%) had RN with a post basic, 28(28%) had BNSC while 2(2%) had master degree. Majority of the respondents 39% have 1-10 years experience, 32% have 11-20 years of experience and 21% of the respondents have 21-30 years while 8% have 31-35 years experience. (Table 1).

Table 1: Demographic Features of Respondents N=100

S/N		Frequency	Percentage (%)
Age	21 - 30	21	21
	31 - 40	36	36
	41 - 51	32	32
	51 - 60	11	11
Religion	Christian	96	96
	Muslim	4	4
Ethnic Group	Yoruba	93	93
	Igbo	5	5
	Hausa	0	0
	Other	2	2
Qualification	RN	39	39
	RN/ Post basic	31	31
	BNSC	28	28
	Masters	2	2

Years of Experience	1-10	39	39
	11-20	32	32
	21-30	21	21
	31-35	8	8

Source: Field Survey 2021

Knowledge of nurses on safe clinical management of Covid-19 in Ondo State: Table 2 shows frequency distribution of correct responses to each of the questions in each of the sections of knowledge of COVID-19 management. Majority 81(81%) of the respondents are in unison that mild cases require external cooling, 84(84%) of the agreed that mild cases require Oxygen administration, if dyspnea, 79(79%) know that mild cases require Antipyretics for fever and myalgia. Majority 87(87%) know that provision of supplemental oxygen therapy is a hallmark of treatment for severe cases, 95(95%) agreed that all areas where severely ill patients are being cared should be equipped with pulse oximeter, functioning oxygen system and disposable, single use oxygen delivery interfaces (nasal cannula, simple face mask, and mask with reservoir bag). Majority 79(76%) of the respondents agreed that empiric therapy for severe cases may include a nucleotide-analog inhibitor of RNA-dependent RNA polymerases like Remdesivir. 83(83%) of the respondents concur that empiric therapy should be de-escalated based on microbiology results and clinical judgement, 77(77%) of the respondents agreed that Mild cases requires nutritional supplementation. Higher percentage 86(86%) know that critical cases require advanced airway and mechanical ventilation, 85(85%) of the respondents complied that critical cases require high flow oxygen administration. 78(78%) of the respondents agreed that critical cases require Nasogastric/ parenteral nutrition. Majority 71(71%) know that critical cases require Shock management: fluids, vasopressors, antimicrobials administration. 74(74%) know that critical cases require Anticoagulants (e.g. low molecular heparin) to prevent thrombosis. 69(69%) of the respondents agreed that critical cases require Extracorporeal membrane oxygenation (ECMO). This results show that Ondo State nurses have good knowledge of safe clinical management of Covid-19.

Table 2: Knowledge of nurses on safe clinical management of Covid-19 in Ondo State

	Yes		No	
	Freq	%	Freq	%
Mild cases require external cooling	81	81	19	19
Mild cases require Oxygen administration, if dyspnea	84	84	16	16
Mild cases require Antipyretics (e.g. acetaminophen) for fever and myalgia	79	79	21	21
Provision of supplemental oxygen therapy is a hallmark of treatment for severe cases	87	87	13	13
All areas where severely ill patients are being cared should be equipped with pulse oximeter, functioning oxygen system and disposable, single use oxygen delivery interfaces (nasal cannula, simple face mask, and mask with reservoir bag).	95	95	5	5
Empiric therapy for severe cases may include a nucleotide-analog inhibitor of RNA-dependent RNA polymerases like Remdesivir.	76	76	24	24
Empiric therapy should be de-escalated based on microbiology results and clinical judgement	83	83	17	17
Mild cases requires nutritional supplementation (e.g. protein and vitamin supplements)	77	77	23	23
Critical cases require Advanced airway and mechanical ventilation	86	86	14	14
Critical cases require high flow oxygen administration	85	85	15	15
Critical cases require Nasogastric/ parenteral nutrition	78	78	22	22
Critical cases require Shock management: fluids, vasopressors, antimicrobials (judicious use only) administration	71	71	29	29
Critical cases require Anticoagulants (e.g. low molecular heparin) to prevent thrombosis.	74	74	26	26
Critical cases require Extracorporeal membrane oxygenation (ECMO)	69	69	31	31
Critical cases require Convalescent plasma administration				

Source: Field Survey 2021

Knowledge grade

Good

76(76%)

Poor

24(24%)

Knowledge of nurses on infection prevention and control (IPC)

From table 3 above, all the respondents have heard about infection prevention and control (IPC), 94(94%) of the agreed that ensuring triage, early recognition, and source control (isolation) of patients with suspected COVID-19 infection is a way of preventing spreading of the virus, 95(95%) agreed that implementation of empiric additional precautions – droplet, contact and airborne precautions – whenever applicable for suspected cases of COVID-19 infection is a way of preventing spreading of the virus, also 97(97%) of the respondents agreed that the level/types of personal protective equipment should be determined by its types of expected exposure and task. Majority 96(96%) of the respondents agreed that personal protective equipment should be change after each patient contact,

71(71%) of the respondents disagreed that other professional health care workers can influence nurses about the use of personal protective equipment. 89(89%) agree that cleaning and disinfection of devices and environmental surfaces is a way of preventing Covid-19, 98(98%) of the respondents agree that Standard precautions should be apply to all patients regardless of their diagnosis, 96(96%) agree that personal protective equipment is a wearable device to protect from infectious substances and all the respondents agreed that absence of personal protective equipment among nurses can expose the them to Covid-19.

Table 3: Knowledge of nurses on infection prevention and control (IPC)

	Yes		No	
	Freq	%	Freq	%
Have you ever heard about infection Prevention and Control (IPC)	100	100	0	0
Ensuring triage, early recognition, and source control (isolation) of patients with suspected COVID-19 infection	94	94	6	6
Implementation of empiric additional precautions – droplet, contact and airborne precautions – whenever applicable for suspected cases of COVID-19 infection.	95	95	5	5
The level/types of personal protective equipment should be determined by its types of expected exposure and task	97	97	3	3
Personal protective equipment should be change after each patient contact	96	96	4	4
Do you think that other professional health care workers can influence nurses about the use of personal protective equipment?	29	29	71	71
Cleaning and disinfection of devices and environmental surfaces	89	89	11	11
Standard precautions apply to all patients regardless of their diagnosis?	98	98	2	2
Personal protective equipment is a wearable device to protect from infectious substances?	96	96	4	4
The absence of personal protective equipment among nurses can expose the them to Covid-19	100	100	0	0

Knowledge grade

Good

94(94%)

Poor

6(6%)

Test of the Hypotheses

H₀₁: There is no significant relationship between knowledge of nurses on safe clinical management of Covid-19 and years of experience

Table 4: Pearson Product Moment Correlation showing Relationship between knowledge of nurses on safe clinical management of Covid-19 and years of experience

Variable	Mean	Std. Deviation	N	r	Sig	Remark
Knowledge of nurses	28.93	5.64	100	.541	.000	Not Significant
Years of experience	21.40	4.13				

Table 4.4 shows that there is positive relationship between knowledge of nurses on safe clinical management of Covid-19 and years of experience ($r = .541$). The table shows further that the relationship is not significant ($N = 100$; $p < 0.05$). Hence, the null hypothesis 1 was accepted. This result implies that there is no significant relationship between knowledge of nurses on safe clinical management of Covid-19 and years of experience.

This study was aimed at assessing knowledge and practice of safe clinical management of Covid-19 among nurses in Ondo State. The findings of this study revealed that mild cases require external cooling and Oxygen administration, if dyspnea, require Antipyretics (e.g. acetaminophen) for fever and myalgia. This finding is in agreement with that of Gan, Lim & Koh D. (2020), in their research on preventing intra-hospital infection and transmission of COVID-19 in healthcare workers found out that mild cases require external cooling and oxygen administration. Also in tandem with that of Abdelhafiz, Mohammed & Ibrahim et al. (2020), concluded that mild cases requires antipyretics (e.g. acetaminophen) for fever and myalgia. The findings also revealed that all areas where severely ill patients are being cared should be equipped with pulse oximeter, functioning oxygen system and disposable, single use oxygen delivery interfaces (nasal cannula, simple face mask, and mask with reservoir bag). This is line with Alegebeye & Mohammed (2020) in their research on challenges of healthcare delivery in the context of COVID-19 pandemic in Sub-Saharan Africa conclude that hospital should be equipped with equipment need to care for the patients. The findings of the study revealed that critical cases require Shock management: fluids, vasopressors, antimicrobials (judicious use only) administration and require high flow oxygen administration. This findings is tandem with that of Guan, Ni, Hu, Liang & Ou, et al. (2020) in their study on clinical characteristics of coronavirus disease 2019 in China found out that critical cases require high flow oxygen administration.

The findings of the study revealed that all 100(100) the respondents have heard about infection prevention and control (IPC), 94(94%) of the agreed that ensuring triage, early recognition, and source control (isolation) of patients with suspected COVID-19 infection is a way of preventing spreading of the virus. Also in tandem with Cheng & Shan (2019), in their study, they found out that early recognition, and source control (isolation) of patients isa way of preventing the spreading of the virus.

The findings also revealed that 95(95%) agreed that implementation of empiric additional precautions – droplet, contact and airborne precautions – whenever applicable for suspected cases of COVID-19 infection is a way of preventing spreading of the virus. This is agreement with Cheng & Shan (2020), they found out that taking proper precaution is a way of preventing covid-19 virus. Also, 97(97%) of the respondents agreed that the level/types of personal protective equipment should be determined by its types of expected exposure and task and majority 96(96%) of the respondents agreed that personal protective equipment should be change after each patient contact.

Table 5: Practices of nurses on management of Covid-19 in Ondo State N-50

	Yes		No	
	Freg	%	Freg	%
Did the nurse wash his/her hands regularly after procedures?	44	88	6	12
Do they use facemask/shield regularly when caring for all clients	41	82	9	18
Are facemask/shield readily supplied in the ward?	19	38	31	62
Do nurse changed mask after each patient?	6	12	44	88
Are masks changed when soiled during nursing procedure?	22	44	28	56
Did the nurse put on gloves before performing the procedure	39	78	11	22
If yes: Was it properly worn?	33	66	17	34
Were the hands washed before putting on gloves?	15	30	35	70
Were the gloves change in between procedures?	14	28	36	72
Were the gloves change in between patients?	45	90	5	10
After each procedure, were the hands washed?	16	32	34	68
Do they regularly disinfect surfaces of personal objects and places?	12	24	38	76
Do they properly handle and dispose sharp instrument and wastes?	41	82	9	18
Do they keep at least 1–1.5 m distance from others?	11	22	39	78
Do they often throw used face masks and tissue papers in separate bags and then in a bin?	18	36	32	64

The findings of the study revealed that 44(88%) of the participants agreed that nurses washes their hands regularly after each procedure, 41(82%) of the participant complied while 9(18%) did not comply that they use facemask/shield regularly when caring for all clients. This is tandem with those of Sharif et al, (2016) who found that 81% of nurses wash their hands regularly. The findings also revealed that 19(38%) of the respondents complied while 31(62%) of the respondent did not comply that facemask/shield are readily supplied in the ward. This is in consistent with that Alegbeleye (2020) who found out that personal protective equipment are not readily supply to the ward.

Table 6: Factors affecting practice of safe clinical management of Covid 19 in Ondo N-100

	Variables	SA	A	D	SD	Remark
1	Job stress among nurses	69	27	3	1	Strongly Agreed
2	Staff and resource adequacy and turnover	44	34	18	4	Agreed
3	Inadequate of personnel	35	38	24	3	Agreed
4	Fear of COVID-19 infection	75	21	3	1	Strongly Agreed
5	Unavailability and unaccessibility of personal protective equipment	38	41	19	2	Agreed
6	Lack of training on infection practice and control (IPC)	44	33	20	3	Agreed
7	Insincerity of patients and relative	31	38	25	6	Agreed
8	Inadequacy of equipment	37	41	19	3	Agreed
9	Unavailability of diagnostic materials	44	38	16	2	Agreed
10	Lack of motivation from the management to the nurses	63	29	7	1	Agreed

Test of the Hypotheses

Ho₂: There is no significant relationship between knowledge and practices of nurses on safe clinical management Covid-19 in Ondo State

Table 7: Pearson Product Moment Correlation showing Relationship between knowledge and practices of nurses on safe clinical management Covid-19 in Ondo State

Variable	Mean	Std. Deviation	N	r	Sig	Remark
Knowledge of nurses	24.73	4.79	100	.773	.000	Significant
Nurses Practice	28.56	6.41				

Table 4.7 shows that there is strong positive relationship between the knowledge and practices of nurses on safe clinical management Covid-19 in Ondo State ($r = .773$). The table shows further that the relationship is significant ($N = 100$; $p < 0.05$). Hence, the null hypothesis 2 was rejected. This result implies that there is significant relationship between knowledge and practices of nurses on safe clinical management Covid-19 in Ondo State.

The findings of the study revealed that job stress, staff and resource adequacy and turnover, inadequate of personnel, fear of COVID-19 infection, unavailability and inaccessibility of personal protective equipment, lack of training on infection practice and control (IPC), insincerity of patients and relative, inadequacy of equipment, inavailability of diagnostic materials and lack of motivation from the management to the nurses are factors affecting practice of safe clinical management of Covid 19 in Ondo. This also in support with the findings of Chan et.al (2020) who found out that fear of COVID-19 infection can influence nurse attitude toward safe management of covid-19.

Finally, the findings revealed that there is positive relationship between knowledge of nurses on safe clinical management of Covid-19 and years of experience. In addition there is strong positive relationship between the knowledge and practices of nurses on safe clinical management Covid-19 in Ondo State. This is expected as years of experience would have resulted in the knowledge gained by Nurses on how to handles infectious diseases in the past. This knowledge is therefore transferred by Nurses into the clinical management of COVID-19 in Ondo State.

Conclusion

Nurse are the frontline defense in the war against COVID-19. Overall, knowledge and practices of nurses on safe clinical management of COVID-19 are adequate and appropriate respectively. The findings shows nurses have knowledge on safe clinical management of covid-19. These findings also show nurses' compliance with washing of hands, using of and face mask/shield. It also revealed that job stress and fear of COVID-19 infection are strong factors that affect the practice of safe clinical management of COVID-19 in Ondo State.

Recommendations/ Suggestion for further studies

Based on the findings of the study the following recommendations were made:

- i. Continuous provision of PPE and training of all nurses on proper infection prevention measures.
- ii. Capacity building of nurses towards essential health service provision especially during this critical period of the pandemic
- iii. Public should be informed about the importance of disclosing possible exposure to the virus to reduce the spread.
- iv. Compliance to use of face masks and social distancing is also advocated
- v. Public should be encouraged to present themselves for COVID-19 vaccination.

I. ACKNOWLEDGMENT

We wish to acknowledge the management of the three hospitals selected for the study and the entire nurses who participated in the study

REFERENCES

- [1] Abdelhafiz, A.S., Mohammed, Z., Ibrahim, M.E. et al. 2020. Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19) [published online ahead of print, 2020 Apr 21]. *Journal of Community Health*. 2020
- [2] Alegebeye, BJ & Mohammed, RK. 2020. Challenges of healthcare delivery in the context of COVID-19 pandemic in Sub-Saharan Africa <http://dx.doi.org/10.5281/zenodo.3755414> *Iberoam J Med*, vol.2, n2, p.100-109, 2020
- [3] CDC. Coronavirus disease 2019 (COVID-19). 2020. [Online]. Retrieved May 13, 2020 from
- [4] Cheng ZJ, Shan J. 2020. Novel coronavirus: where we are and what we know. *Infection* 48:1–9.
- [5] Cheng ZJ, Shan J. 2019 Novel coronavirus: where we are and what we know. *Infection*. 2020 Apr;48(2):155-163. doi: 10.1007/s15010-020-01401-y. Epub 2020 Feb 18. Erratum in: *Infection*. 2021 Feb;49(1):197. Erratum in: *Infection*. 2022 Dec;50(6):1637. PMID: 32072569; PMCID: PMC7095345.
- [6] El Bushra HE, Al Arbash HA, Mohammed M, Abdalla O, Abdallah MN, Al-Mayahi ZK, Assiri AM, BinSaeed AA. Outcome of strict implementation of infection prevention control measures during an outbreak of Middle East respiratory syndrome. *Am J Infect Control*. 2017 May 1;45(5):502-507. doi: 10.1016/j.ajic.2016.12.020. Epub 2017 Feb 8. PMID: 28189413; PMCID: PMC7132728.
- [7] Gan WH, Lim JW, Koh D. 2019. Preventing Intra-hospital Infection and Transmission of Coronavirus Disease 2019 in Healthcare Workers. *Saf Health Work*. 2020 Jun;11(2):241-243. doi: 10.1016/j.shaw.2020.03.001. Epub 2020 Mar 24. PMID: 32292622; PMCID: PMC7102575.
- [8] Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, Liu L, Shan H, Lei CL, Hui DSC, Du B, Li LJ, Zeng G, Yuen KY, Chen RC, Tang CL, Wang T, Chen PY, Xiang J, Li SY, Wang JL, Liang ZJ, Peng YX, Wei L, Liu Y, Hu YH, Peng P, Wang JM, Liu JY, Chen Z, Li G, Zheng ZJ, Qiu SQ, Luo J, Ye CJ, Zhu SY, Zhong NS; China Medical Treatment Expert Group for Covid-19. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med*. 2020 Apr 30;382(18):1708-1720. doi: 10.1056/NEJMoa2002032. Epub 2020 Feb 28. PMID: 32109013; PMCID: PMC7092819.
- [9] Ijarotimi IT, Ilesanmi OS, Aderinwale A, Abiodun-Adewusi O, Okon IM. Knowledge of Lassa fever and use of infection prevention and control facilities among health care workers during Lassa fever outbreak in Ondo State, Nigeria. *Pan Afr Med J*. 2018 May 24;30:56. doi:10.11604/pamj.2018.30.56.13125. PMID: 30197747; PMCID: PMC6125309.
- [10] Ioannidis JPA. Coronavirus disease 2019: The harms of exaggerated information and non-evidence-based measures. *Eur J Clin Invest*. 2020 Apr;50(4):e13222. doi: 10.1111/eci.13222. PMID: 32191341; PMCID: PMC7163529.
- [11] Lie, X., Wang, X., Yang, Q. et al. 2020. Will healthcare workers improve infection prevention and control behaviors as COVID-19 risk emerges and increases, in China?. *Antimicrob Resist Infect Control* 9, 83 . <https://doi.org/10.1186/s13756-020-00746-1>

- [12] Makoni, M. (04. September 2020). COVID-19 vaccine trials in Africa. The Lancet Respiratory Medicine. Journal of Science and Education <http://www.sciepub.com/reference/347358>
- [13] Nigeria Center Disease Control 2020. Implementation Guidelines for Containment of Covid-19.
- [14] Reuben RC, Danladi MMA, Saleh DA, Ejembi PE. Knowledge, Attitudes and Practices Towards COVID-19: An Epidemiological Survey in North-Central Nigeria. J Community Health. 2021 Jun;46(3):457-470. doi: 10.1007/s10900-020-00881-1. PMID: 32638198; PMCID: PMC7338341.
- [15] Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, Kaushal V (2020). Study of knowledge, attitude, anxiety and perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian Journal of Psychology.
- [16] Sharif A, Arbabisarjou A, Balouchi A, Ahmadidarrehshima S, Kashani HH. 2020. Knowledge, Attitude, and Performance of Nurses toward Hand Hygiene in Hospitals. Glob J Health Sci. 2016 Aug 1;8(8):53081. doi: 10.5539/gjhs.v8n8p57. PMID: 27045398; PMCID: PMC5016353. Sadati AK, Lankarani MHB, Lankarani KB Risk society, global vulnerability and fragile resilience; sociological view on the coronavirus outbreak. Shiraz E-Med J 21:e102263.
- [17] Shallie, P.D. & Haffejee, F., 2022, 'Knowledge, attitudes and behaviours toward COVID-19: A cross-sectional survey among Nigerian University students', Health SA Gesondheid 27(0), a1725. <https://doi.org/10.4102/hsag.v27i0.1725>
- [18] Shrikrushna U, Bilal QS, Shubham T, Suraj W, Shreya BR, Suraj S, Biyani KR 2020. A review on corona virus (COVID-19) International Journal of Pharmaceutical and Life Sciences
- [19] Tavakoli A, Vahdat K, Keshavarz M (2020) Novel coronavirus disease 2019 (COVID-19): an emerging infectious disease in the 21st century. ISMJ 22:432–450.
- [20] Wang C, Horby PW, Hayden FG, Gao GF (2020). A novel coronavirus outbreak of global health concern. The Lancet.
- [21] World Health Organization 2020. Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020.
- [22] WHO 2020a Coronavirus disease (COVID-2019) situation reports. https://www.who.int/docs/default-source/coronaviruse/situationreports/20200321-sitrep-61-covid-19.pdf?sfvrsn=f201f85c_2. Accessed 20 Mar 2020
- [23] WHO 2020b. Health topics, coronavirus. <https://www.who.int/health-topics/coronavirus>. Accessed 24 Mar 2020
- [24] WHO 2020c. Report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19) <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>. Accessed 24 Feb 2020
- [25] WHO 2020. WHO characterizes COVID-19 as a pandemic. <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19-11-march-2020>. Accessed 11 Mar 2020
- [26] Zhong B-L, Luo W, Li H-M et al 2020. 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 BiolSci 16:1745–1752.