

Perception of Nurses towards Transmittability and Psychosocial Effects of Managing Patients During Covid-19 Pandemic

S O. Omoniyi.^{1*}, B D Fabgbemi.², D Aliyu.³, D D Faleti⁴, H Olorukooba⁵, V O. Oguntoye.¹

¹School of Nursing Science, University Teaching Hospital Ilorin, Kwara State, Nigeria

²Health Centre, Federal University of Technology Dutse Ma, Katsina State, Nigeria

³School of Peri-Operative Nursing, A B U Teaching Hospital-Zaria, Kaduna State, Nigeria

⁴Behavioural Science Unit, University of Ilorin teaching Hospital, Kwara State, Nigeria

⁵Faculty of Clinical Sciences, University of Ilorin, Ilorin, Nigeria

*Correspondence Author

DOI: <https://dx.doi.org/10.47772/IJRISS.2023.71036>

Received: 13 April 2023; Revised: 13 September 2023; Accepted: 18 September 2023; Published: 18 October 2023

ABSTRACT

Background: The magnitude of COVID 19 outbreak in Nigeria has posed serious psychological and social raucous on nurses and midwives. The unusual outbreak of the infectious disease and lack of PPE, and strategies for managing infected and uninfected patient simultaneously calls for future preparedness for pandemics.

Objective: To determine the perception of nurses towards transmutability and psychosocial effects of managing patients during covid-19 pandemic. Specifically on the transmutability, nurse's perception, psychological and social effect outbreak epidemic.

Methods: This is a cross-sectional descriptive study. Self-structure questionnaires were administered through an online google form and three hundred and six (306) were valid for analysis.

Results: Almost (96.7%) of the participants perceived spread of COVID 19 correctly, as they point out that the virus can be contacted through hospital transmission and (94.4% of them perceived that it is also transmitted through contact routes. The psychological effect about COVID 19 (73.9%) them feel unprotected during this outbreak of COVID-19, and (73.5) experience feeling of anxiety while attending to patients during the pandemic. More than half (86.9) of the participants depict that their communal interaction was affected, and (70.3) attest that there was emotional distress during the outbreak.

Conclusion: The studied participants in this study have correct perception about transmission of COVID 19. Feeling of unprotected, lack of PPE, lack of communal interaction, emotional distress and anxiety were the psychosocial challenges experience when managing patient during the outbreak. Effort should be strengthened to provide more isolation centres, procurement of PPE, personal hygiene utilities should be made available in the hospitals and adoption inclusive barrier nursing method. This perhaps will help to manage future epidemics.

Keywords: Nurses, Perception, Transmittability, COVID-19, Managing-Patients, Psychosocial-effects

INTRODUCTION

The emergence of novel coronavirus, has caused a highly contagious disease called coronavirus disease

2019 (COVID-19), that was first reported at Wuhan city in China in December, 2019, in less than three months spread throughout the globe and declared a global pandemic by the World Health Organization (WHO) on 11th of March, 2020 (Shabir & Aijaz 2020) Africa continent reported its first case in Egypt on 14th February 2020, (WHO 2020) Nevertheless, Nigeria confirmed its first index case of the disease on 27 February 2020 in Lagos, Ogun state and the FCT Abuja. (Nigeria Centre for Disease Control 2020). Thus the virus is mainly transmitted through respiratory droplets produced by the coughing and sneezing of an infected individual. A healthy person is likely to get exposed to these droplets directly or indirectly from a contaminated surface (Burhan et al., 2020). Asymptomatic patients may be infectious and symptomatic patients may be infectious for as long as the symptoms last (Zou et al., 2020). Despite the growing demand and focus on protecting health care workers across the world especially through provision of personal protective equipment (PPE), training, addressing fatigue, and countering the psychosocial consequences. (Chen et al., 2020; Legido-Quigley et al., 2020). Report by Natasha et al., (2020) has illustrated that the pandemic spread to over 198 countries, with approximately 154 million confirmed cases and 3,232,285, deaths globally as of May, 2021 (WHO 2021).

WHO states that there is a high risk of COVID-19 spreading to other countries around the world (WHO 2020). According to WHO (2020) the spreading of the infectious disease around the globe is with heavy impact on the global health, that increases the mental health issues, ranging from stress, anxiety, depressive symptoms, insomnia, denial, anger and fear which wreck the emotional stability of individual, family, and global communities, the outbreak simultaneously laid unprecedented emotional stress on health workers all over the world specifically the nurses, leading to a dreadful approach of caring in the health facilities (Zhou et al., 2020), that result into uncertainty and low predictability at work, threaten people's physical health and sway their mental health, predominantly in terms of emotions and cognition (John et al., 2013). As nurses face a substantial high risk of infection and death owing to the exposure to diagnose and undiagnose COVID-19 patient in the hospital wards as they render care and services to varieties of clients/patients which apparently subject them to a state of apprehension (Ameh 2020).

Nurses face huge psychological pressure as a result of workload, long hours, working in a high-risk environment with dramatically and increase in the number of COVID-19 patients (Enyew 2021). More importantly Natasha et al.,(2020) assert that several risk factors such as; long duty hours, working in the high-risk department, lack of PPE, diagnosed family member, unqualified hand-washing, and improper infection control and prolonged PPE usage led to skin damage, with the nasal bridge being the most common site. On the other hand Koh (2020) records that factors disturbing psychosocial wellbeing of the nurses include the overwhelming situations, social disruption of daily life, feeling vulnerable at risk of getting infected, fear of transmitting the disease to their families, and loved ones. Additionally Natasha et al., (2020) affirmed high levels of depression, stress, anxiety, distress, anger, fear, insomnia, and post-traumatic stress disorder in the nurses, particularly female nurses were disproportionately affected more from emotional consequences, as they work in close contact with patients for longer working hours, which possibly will result into fatigue, stress, and anxiety.

Inversely the doubt and low sureness belief about COVID-19 not only threaten people's physical health, but also affect people's mental health, largely in terms of emotions, cognition and social interactions. In line with these WHO (2020) states that people are likely to develop negative emotions in terms of aversion, anxiety and negative cognitive assessment, for self-protection. Therefore Natasha et al., (2020) established that when faced with potential disease threat, people tend to develop avoidant behaviors that may include, avoiding contact with people who have pneumonia-like symptoms, and so nurses who are in direct contact in the activities of caring for confirmed or suspected patients of COVID 19 are vulnerable to both high risk of infection and psychological health problems that could impinge on therapeutic relationship and social interactions. Hence they may also experience fear of contagion and spreading the virus to their families, friends, or colleagues. This is in consonance with Mowbray (2020) that fear of the unknown leads to higher

anxiety level in both healthy people and those with pre-existing mental health problems; unjustified communal fear may also lead to discrimination, stigmatization and scapegoats. Since mental health care of the health professionals are the determinant of their output. It is on the background that the study sought to assess the perception of the nurses on the transmutability and psychosocial effects of managing patients during covid-19 pandemic

Aims and Objective of the study

The objective of this study is to determine the perception of nurses towards transmittability and psychosocial effects of managing patients during covid-19 pandemic the following are the specific objectives to:

1. assess Nurses knowledge on the transmission of corona virus
2. determine nurses perception towards managing patients during the outbreak of COVID 19
3. identify psychological and social effect of the outbreak on nurses

METHODS

The Study Area

The study was carried out at tertiary health facilities during the Epicenter of COVID 19 between the periods of lock down during the pandemic that is; Mondays 27th March to Friday 31st July 2020. **Nigeria** is officially known as **Federal Republic of Nigeria**. The Country is located in West Africa region. It occupy about 356,669 sq mi (923,768 sq km), with population of 222,486,000 people. The country have more than 250 ethnic groups, including Hausa, Fulani, Yoruba, and Igbo. Major spoken Languages includes Yoruba, Igbo and Hausa. Religions Christianity (Protestant, other Christians, Roman Catholic), Islam, traditional beliefs. Currency: naira. Nigeria consists of six geo political zones. It has a developing mixed economy based largely on petroleum production and agriculture; manufacturing is growing in importance. Services, trade, and transportation employ more than two-fifths of the workforce. Nigeria is a federal republic with two legislative bodies; its head of state and government is the president. It has about 48 tertiary health care facilities spread across the six geo political zones, which includes 20 Teaching Hospitals (THs), 22 Federal Medical Centres (FMCs) and 8 Specialist Hospitals (SHs) respectively.

Study Design

This is a cross-sectional descriptive study design involving all nurses and midwives who were working with Federal health care facilities in Nigeria.

Study Population

The study participants are all nurses and midwives working in tertiary health facilities in Nigeria. A total 279 make up the population.

Sample Technique

The study deployed purposive and convenient sampling techniques. The purposively was used to select the six geo political zone, while convenient sampling was used for the selection of participants via an online google form.

Data Collection Tools

A self-structured questionnaire was developed by the researchers from review of relevant literature on

perception, transmutability and psychosocial effects of managing patients during covid-19 among nurses was used to collect relevant data from the respondents through online google form.

The survey was initially tested on 28 nurses and midwives, which is 10% of the overall sample, at the General Hospital in Ilorin, Kwara State. Following their feedback, the data was compiled and analyzed with SPSS version 25. The overall reliability score from the pilot test was 0.76. However, for sections B, C, and D, the Cronbach Alpha values were 0.789, 0.572, and 0.805, respectively.

Data Analysis and Management

Data analysis was done using SPSS version 20.0 for windows. Descriptive analysis was computed using dependent and independent variables, Mean and Standard Deviation, while test for significance was determined using Chi-Square (X^2).

Ethics

Permission was sought from individual participant through the online google form before filling of the questionnaire.

RESULTS

Characteristics of the Study Participants

Table 1: The characteristics of the study participants (n = 306)

Variables		Frequency	Percentage
Age (in years) Mean Age: 39.70 ± 10.10years	20 – 29	52	17.0
	30 – 39	95	31.1
	40 – 49	76	24.8
	50 – 59	64	20.9
	60 – 69	19	6.2
	Total	306	100.0
Gender	Female	228	74.5
	Male	78	25.5
	Total	306	100.0
Highest Level of Qualification	RN	41	13.4
	RN with Post Basic	73	23.9
	BNSc	159	51.9
	MSc	32	10.5
	PhD	1	0.3
	Total	306	100.0
Professional Rank	NO II	44	14.4
	NO I	52	17.0
	SNO	58	18.9
	PNO	38	12.4
	ACNO	23	7.5

	CNO	57	18.6
	ADNS	26	8.5
	DDNS	7	2.3
	DNS	1	0.3
	Total	306	100.0
Years of Service	0 – 9	110	35.9
	10 -19	105	34.3
	20 – 29	58	19.0
	30 – 39	33	10.8
	Total	306	100
Place of Practice	THs	246	80.4
	FMCs	35	11.4
	SHs	25	8.2
	Total	306	100.0
Area of Practice	A&E	34	11.1
	Medical Ward	37	12.1
	Surgical Ward	21	6.9
	Administration	19	6.2
	Theatre	35	11.4
	Mental Health	25	8.2
	ICU	26	8.5
	O&G	41	13.4
	Paediatrics	26	8.5
	Public health	16	5.2
	ENT	2	.7
	Education	10	3.3
	Orthopaedics	6	2.0
	Renal	2	.7
	Burns & Plastics	1	.3
	Ophthalmology	5	1.6
Total	306	100.0	
Geo-Political Zone	South West	86	28.1
	South East	10	3.3
	South South	28	9.2
	North Central	134	43.8
	North West	38	12.4
	North East	10	3.3
	Total	306	100.0

Most of the study participants, 95 (31.1%) are within the age range 30-39 years with a mean age of 39.70 ± 10.10 years. Majority are females 228 (74.5%) with most of them 146 (47.7%) with BNSC as their highest level of qualification. Few of the participants 57 (18.6%) were CNO while most of them 110 (35.9%) were

within 0-9 years of service. Many of them 246 (80.4%) work in the public sector with minority 37 (12.1%) working on a medical ward. Most of them 100 (32.7%) are from the North Central geo-political zone. Table 2: The perception of study participants on the transmission of coronavirus (n = 306)

Variables	Yes (%)	No (%)	Unsure (%)	No Response (%)
Can COVID-19 virus be transmitted among people through droplets?	288 (94.1)	14 (4.6)	1(0.3)	3 (1.0)
Can COVID-19 be transmitted through contact routes?	289 (94.4)	8 (2.6)	4 (1.3)	5 (1.7)
Do you think that asymptomatic individuals can transmit COVID-19?	292 (95.4)	5 (1.6)	6 (2.0)	3 (1.0)
Can COVID-19 be contacted through hospital transmission?	296 (96.7)	2(0.7)	3 (1.0)	5 (1.6)
Can COVID-19 infection be prevented?	302 (98.7)	1 (0.3)	1 (0.3)	2 (0.7)
Do you feel your safety in the ward is guaranteed in contacting the virus than nurse at isolation centers?	40 (13.1)	239 (78.1)	23 (7.5)	4 (1.3)

Higher proportion of the study participants 288 (94.1%) believed COVID-19 virus can be transmitted among people through droplets, 289 (94.4%) believed it can be transmitted through contact routes, 292 (95.4%) thought that asymptomatic individuals can transmit COVID-19, 302 (98.7%) believed COVID-19 infection can be prevented.

Table 3: The perception of nurses on the psychological effect of managing infected patients n= 306

Variables	Yes (%)	No (%)	Unsure (%)	No Response (%)
Does caring for patients in the ward make you feel unprotected during this outbreak of COVID-19?	226 (73.9)	65 (21.2)	10 (3.3)	5 (1.7)
Do you experience the feeling of anxiety while attending to patients during this COVID-19 pandemic?	225 (73.5)	66 (21.6)	10 (3.3)	5 (1.7)
Do you feel unhappy while caring for your patients during these COVID-19 outbreak?	60 (19.6)	222 (72.5)	16 (5.2)	8 (2.7)
Do you worry about contracting COVID-19 from patient?	253 (82.7)	39 (12.7)	9 (2.9)	5 (1.7)
Do you think you have been exposed to COVID-19 infection from patients?	115 (37.6)	155 (50.7)	35 (11.4)	1 (0.3)
Have you been stressed at work due to COVID 19 outbreak?	187 (61.1)	104 (34.0)	5 (1.6)	10 (3.3)

Majority of the respondents 226 (73.9%) believed caring for patients in the ward makes them feel unprotected, 225 (73.5%) experiences the feeling of anxiety while attending to patients while 222 (72.5%) do not feel unhappy while caring for patients during this outbreak of COVID-19. Many of them 253 (82.7%) worry about contracting COVID-19 from patient.

Table 4: The perception of nurses on the social effect of managing infected patients (n = 306)

Variables	Yes (%)	No (%)	Unsure (%)	No Response (%)
Have you experienced burn-out due to COVID-19 outbreak?	130(42.5)	140(45.8)	18 (5.9)	18 (5.9)
Do you experience emotional distress during COVID-19 outbreak?	215 (70.3)	71 (23.2)	15 (4.9)	5 (1.7)
Did you at any point absent yourself from your duty post due to COVID-19 outbreak?	19 (6.2)	278 (90.8)	0 (0)	9 (3.0)
Have you at any point had misunderstanding with your superiors or colleagues at work due to COVID-19 pandemic?	80 (26.1)	214 (69.9)	3 (1.0)	9 (3.0)
COVID-19 pandemic affects your communal interaction?	266 (86.9)	37 (12.1)	0 (0)	3 (1.0)
COVID-19 affects your relationship with your family?	177 (57.8)	123 (40.2)	0 (0)	6 (1.9)

Majority of the respondents 140 (45.8%) have not experienced burn-out due to COVID-19 outbreak; however, 215 (70.3%) have experience emotional distress. Also, many 278 (90.8%) have not at any point absent themselves from duty post due to COVID-19 outbreak nor have misunderstanding with their superiors or colleagues at work 214 (69.9%).

Table 5: Level of association between selected sociodemographic data of participants (gender, age, years of service and area of practice) and the experience of burnout due to COVID-19 outbreak.

		Experience of Burnout			Chi-Square (X ²)	p-value
		Yes	No	Unsure		
Gender	Female	103	98	13	3.070	0.381
	Male	26	40	4		
Age	20 – 29	22	26	3	8.306	0.761
	30 – 39	42	42	5		
	40 – 49	38	30	4		
	50 – 59	19	36	4		
	60 – 69	3	2	0		
Years of Service	0 – 9	53	48	5	7.572	0.578
	10 -19	46	46	8		
	20 – 29	22	27	4		
	30 – 39	6	9	0		
Area of Practice	A&E	20	12	2	47.129	0.508
	Medical Ward	14	16	4		
	Surgical Ward	10	10	1		
	Administration	10	7	0		
	Theatre	10	21	3		
	Mental Health	9	8	0		
	ICU	4	4	0		
	O&G	21	15	3		
	Paediatrics	9	12	0		
	Public health	5	9	1		

	ENT	0	2	0		
	Education	3	7	0		
	Orthopaedics	3	3	0		
	Renal	2	0	0		
	Burns & Plastics	1	0	0		
	Ophthalmology	1	2	2		
	Others	4	4	1		

There are no significant association between the respondents' experience of burnout due to COVID-19 outbreak and their gender ($X^2=3.070$; $p=0.381$), age ($X^2=8.306$; $p=0.761$), years of service ($X^2=7.572$; $p=0.578$) and area of practice ($X^2=47.129$; $p=0.508$).

Table 6: Level of association between selected socio demographic data of participants (gender, age, years of service and area of service) and the experience of emotional distress due to COVID-19 outbreak.

		Experience of Burnout			Chi-Square (X^2)	p-value
		Yes	No	Unsure		
Gender	Female	103	98	13	2.510	0.473
	Male	26	40	4		
Age	20 – 29	22	26	3	14.834	0.251
	30 – 39	42	42	5		
	40 – 49	38	30	4		
	50 – 59	19	36	4		
	60 – 69	3	2	0		
Years of Service	0 – 9	53	48	5	10.082	0.344
	10 -19	46	46	8		
	20 – 29	22	27	4		
	30 – 39	6	9	0		
Area of Practice	A&E	20	12	2	137.272	0.000
	Medical Ward	14	16	4		
	Surgical Ward	10	10	1		
	Administration	10	7	0		
	Theatre	10	21	3		
	Mental Health	9	8	0		
	ICU	4	4	0		
	O&G	21	15	3		
	Paediatrics	9	12	0		
	Public health	5	9	1		
	ENT	0	2	0		
	Education	3	7	0		
	Orthopaedics	3	3	0		
	Renal	2	0	0		
Burns & Plastics	1	0	0			
Ophthalmology	1	2	2			
Others	4	4	1			

There are no significant association between the respondents' experience of emotional distress due to COVID-19 outbreak and their gender ($X^2=2.510$; $p=0.473$), age ($X^2=14.834$; $p=0.251$), years of service ($X^2=10.082$; $p=0.344$) and but there is a significant association between the respondents' experience of emotional distress due to COVID-19 outbreak and their area of service ($X^2=4137.272$; $p=0.000$).

DISCUSSION

This study assessed perception of Nurses towards transmittability and psychosocial effects of managing patients during covid-19 pandemic in Nigeria. The contribution of this study will increase the growing body of knowledge regarding future infectious disease epidemic management in Hospitals. Corona virus appears to be the most deadly viral outbreak in world, as it spread to 198 countries, with approximately 154 million confirmed cases and 3, 232, 2853, deaths. Presently, the virus has cause global economy weakness. The reported case of COVID-19 in Nigeria appeared in 27 February 2020. Findings from this study shows that majority of the respondents are females which is an indicator that the profession is a female-dominated one with most of them (47.7%) with BNSC as their highest level of qualification. Their mean age is range 30-39 years with a mean age of 39.70 ± 10.10 years respectively.

In this study, perception on transmission of COVID-19 was correct as almost all (96.7%) of the participants feel that the virus can be contacted through hospital transmission and (94.4% of the participants also believed that COVID-19 can be transmitted through contact routes. This finding is agreement with a study by Burhan et al., (2020) carried out at Indonesian by Burhan et al., (2020) on Clinical Progression of COVID-19 Patient with Extended Incubation Period, Delayed RT-PCR Time-to-positivity, and Potential Role of Chest CT-scan. Acta Medica, reported that the virus is mainly transmit through respiratory droplets produced by the coughing and sneezing of an infected individual. A healthy person is likely to get exposed to these droplets directly or indirectly from a contaminated surface. Similarly (95.4) of them perceived that asymptomatic individuals can transmit COVID. Comparatively, the results of this study and previous study by Zou et al., (2020) established that asymptomatic patients may be infectious and symptomatic patients may be infectious for as long as symptoms last. Inversely, good numbers (78.1%) of the participants felt their safety in the ward is not guaranteed in contacting the virus than nurse at isolation centers. This finding is line with Ameh (2020) that affirmed that nurses face a substantial high risk of infection and death owing to the exposure to diagnose and undiagnosed COVID-19 patient in the hospital wards as they rendering care and services to varieties of clients/patients which apparently subject them to a state of apprehension.

In this study, the psychological impact of treating infected patients was evident. A majority, 73.9%, felt vulnerable during the COVID-19 outbreak, and 73.5% felt anxious while caring for patients amidst the pandemic. Similarly, 82.7% expressed concerns about catching the virus from patients. This suggests that most respondents might hesitate to accept and care for patients due to fear of infection and the emotional strain from possibly losing patients. This study aligns with findings by Natasha et al., (2020), which revealed multiple risk factors, including long working hours, working in high-risk zones, insufficient PPE, having a diagnosed family member, inadequate hand hygiene, and subpar infection control. Extended PPE use was linked to skin damage, notably on the nasal bridge. These factors contribute to various mental health challenges like stress, anxiety, depressive symptoms, sleeplessness, denial, anger, and fear, destabilizing the emotional well-being of individuals and their families. Furthermore finding on the social effect of managing infected patients, revealed that large number (86.9) of the participants agreed that COVID-19 pandemic affects their communal interaction, (70.3) attest to experience emotional distress during COVID-19 outbreak. The data suggests that respondents were hesitant to engage deeply in therapeutic interactions with patients and refrained from connecting with their loved ones due to fears of transmitting the virus and lockdown measures. This is in line with the WHO's 2020 findings which stated that the COVID-19 pandemic hampers cognitive functions and social interactions, including therapeutic relationships. Natasha et al. (2020) further observed that such unwarranted collective fear could result in discrimination, stigmatization, and scapegoating. However, it's notable that 90.8% of respondents

remained present at their jobs throughout the pandemic, which might cause compassion fatigue among them. Additionally, 69.9% mentioned that they didn't experience conflicts with their superiors or peers due to the pandemic's stresses.

CONCLUSION

The study's findings led researchers to draw the conclusion that Nigerian nurses and midwives had a reasonable understanding of how COVID 19 was transmitted. When the nurses were managing people during the pandemic, they felt unprotected and lacked PPE. Lack of social interaction, emotional discomfort, and worry were the main psychosocial difficulties encountered when managing patients during the pandemic as far as psychological and societal effects were concerned. Therefore, it is crucial to consider the nurses' physical, psychological, social, and behavioral health at service locations as doing so will promote high-quality nursing care.

Implication for Nursing Practice.

Nurses are the only health care providers who have the most direct contact with the patients. Nurses spend longer hour in the hospital and carry out mote procedures which bring them in contact with the patient. It is therefore very important that anxiety free therapeutic environment that will minimize spread of hospital acquired infection should be created for nurses. This involves strict compliance to the hospital protocols on infection control and used of personal protective equipment with adequate supply of resource and increase staff strength. Research on prevention of hospital acquired infections.

RECOMMENDATIONS

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

1. There is need to establish isolation in each centres with manpower and they should be well equipped with emergency drugs, resuscitating equipment, personal protective equipment, hand sanitizers and running tab water.
2. There need to create counselling psychology clinic in all the facilities where staffs can be assessed when there is threat of emotional instability.
3. Continuing professional training and retraining of all stakeholders on the management and prevention of all communicable diseases.

ACKNOWLEDGEMENT

The contribution of Mrs. Amina W Abdur-Salam of School of Nursing University Teaching Hospital-Ilorin, Kwara State, Nigeria is thankfully acknowledged.

CONFLICT OF INTEREST

The authors declare that no conflict of interest exist.

REFERENCE

1. Ameh, J., (2020). Covid-19: Buhari Names 12-Member Presidential Task Force to Control Spread. Punch. March 9, 2020. <https://punchng.com/covid-19-buhari-names-12-member-presidential-task-force-to-control-spread>.
2. Burhan E, Prasenohadi P, Rogayah R, Isbaniyah F, Reisa T., et al (2020). Clinical Progression of COVID-19 Patient with Extended Incubation Period, Delayed RT-PCR Time-to-positivity, and

- Potential Role of Chest CT-scan. *Acta Medica Indonesiana*. 2020;52 (1):80
3. Chen Q, Liang M, Li Y, Guo J, Fei D, Wang L, (2020) Mental health care for medical staff in China during the COVID-19 outbreak. *Lancet Psychiatry*. 2020;7(4):e15–6.
 4. Enyew M, Belayneh S, Niguse M (2021) The Psychological Impact of COVID-19 Outbreak on Nurses Working in the Northwest of Amhara Regional State Referral Hospitals, Northwest Ethiopia *Journal of Psychology Research and Behavior Management* Volume 13.
 5. John, A.T.J.; Natalie, J.S.; Michael, A.M. (2013) The behavioral immune system and social conservatism: A meta-analysis. *Hum. Behav.* 34, 99–108.
 6. Koh D. (2020) Occupational risks for COVID-19 infection. *Occup Med (Lond)*. 2020; 70(1):3–5.
 7. Legido-Quigley H, Mateos-García J T, Campos V R, Gea-Sánchez M, Muntaner C, McKee M (2020) The resilience of the Spanish health system against the COVID-19 pandemic. *The Lancet Public Health*.;2667(20):19–20.
 8. Mowbray, H. (2020). In Beijing, coronavirus 2019-nCoV has created a siege mentality. *British Medical Journal*, 2020, 368.
 9. Natasha S, Daniyal M A and Junaid R (2020) Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review *International Journal of Emergency Medicine* <https://doi.org/10.1186/s12245-020-00299-5>.
 10. Nigeria Centre for Disease Control, (2020) First Case of Corona Virus Disease Confirmed in Nigeria. NCDC, Abuja, Nigeria. Downloaded on March 30th 2020 from <https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-nigeria>.
 11. Shabir A L & Aijaz A (2020): COVID-19 pandemic – An African perspective, *Emerging Microbes & Infections*, DOI: 10.1080/22221751.2020.1775132 To link to this article: <https://doi.org/10.1080/22221751.2020.1775132>
 12. World Health Organization. (2020a) COVID-19 cases top 10,000 in Africa. <https://www.afro.who.int/news/covid-19-cases-top-10-000-africa>.
 13. World health organization (2021b) World health organization coronavirus (Covid-19) dashboard retrieved on May 6, 2021
 14. World health organization (2020) mental health and psychosocial considerations during the COVID-19 outbreak WHO/2019-nCoV/Mental Health/2020.1 by available under the CC BY-NC-SA3.0 IGO license.
 15. Zhou Z, Shabei X, Hui W, Zheng L, Jianhong W, et al., (2020) COVID-19 in Wuhan: Immediate Psychological Impact on 5062 Health Workers available under a CC-BY-NC-ND 4.0 International license.
 16. Zou L, Ruan F, Huang M, Liang L, Huang H, Hong Z (2020) SARS-CoV-2 viral load in upper respiratory specimens of infected patients. *New England Journal of Medicine* 2020;382(12):1177–1179