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Health Workers and Coronavirus Disease Pandemic: Knowledge, Attitude and Effects in Port Harcourt, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Authors JOD and RFOAI designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors JOD and BOIOO managed the analyses of the study. Author RFOAI managed the literature searches. All authors read and approved the final manuscript

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ABSTRACT

Background: There are reports of the spread of the novel COVID-19 to Africa, Nigeria, and some cases in Rivers State. The aim of this study was to investigate the knowledge, attitude and effects of the coronavirus disease pandemic on hospital staff in the month of May to June 2020.
Methodology: The convenience sampling method was used to recruit 297 hospital staff in a cross-sectional descriptive study carried out using semi-structured questionnaires in a tertiary healthcare facility. Data obtained was analysed using the Statistical Package for the Social Sciences (SPSS) version 20.0.
Results: Two hundred and sixty-two respondents (88.2%) had prior knowledge of coronavirus, and

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228 (76.8%) got their information from Television/Radio/Newspapers. Two hundred and fifty-one (84.5%) respondents described COVID-19 pandemic as a disease caused by an imported germ. Regardless of the fear/panic of the COVID-19 pandemic, 230 (77.4%) of the respondents indicated that they would continue to visit their sick relative in the hospital. The COVID-19 pandemic moderately affected the family life of 110 (37.0%) respondents, while 68 (12.5%) were devastated by it. The means of livelihood was moderately affected in 76 (25.6%) respondents, and 43 (14.5%) devastated by it.

Conclusion: The negative impact of the coronavirus pandemic was experienced significantly in varied proportions – moderately, severely, and in devastating manner.

Keywords: Coronavirus disease pandemic; health workers; knowledge; attitude; effects; port Harcourt; Nigeria.

1. INTRODUCTION

The Corona Virus Disease 2019 (COVID-19) was declared a pandemic in March 2020 by the World Health Organization, following the spread of a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in the city of Wuhan, Hubei Province in China in December 2019 [1,2]. Unlike earlier pandemics such as influenza, the penaeid shrimp viral pandemics, cholera, the plagues, none has had the level of morbidity, mortality and spread as the COVID-19 disease which has been reported in all continents of the world with deaths in three-digit thousands and cases in millions. [3-7] The impact of this disease has been enormous despite containment measures in different countries advocating avoidance of public gatherings (lockdown), adopting social distancing, hand hygiene measures, and use of personal protecting equipment (PPE) for the front-liners [8-10].

The enveloped positive single stranded large RNA viruses known as coronaviruses was first reported by Tyrell and Bynoe in 1966 [11,12]. There are four subfamilies (alpha, beta, gamma and delta) of coronaviruses and seven subtypes are known to infect humans. However, the COVID-19 (SARSCoV-2) strain belonging to the beta-subfamily of enveloped positive, single stranded large RNA virus is the cause of the pandemic [12,13]. The disease has proven to be an enigma because the clinical features and contact histories of patients does not always agree with laboratory detections and radiographic images [14-18]

There are also setbacks and technicalities of sample collection and transportation [6,18]. The World Health Organization regularly provide updates on treatment, as well as evidence-based preventive measures [19,20]. The COVID-19 pandemic has so far affected individuals, families, countries and continents in various ways [21,22]. The economy of nations is threatened [23,24], while travel restrictions and lockdown of cities and nations have been followed by behavioral change such as panic purchases [25,26]. In addition, even equipment and consumables needed for healthcare services have been reported to be in short supply [27,28]. These have caused a delicate balance in the workplace, public functions and social events in most countries. Emergence of virulent strains of the COVID-19 virus in some countries has been reported with differential mortality [29,30] and efforts are being intensified towards getting safe vaccines for the pandemic [31-33].

Reports on the novel COVID-19 in Africa, [20] and from researchers in Nigeria, [20,34,35] including some cases in Rivers State are varied. There exists some mutual suspicion between healthcare givers and patients. Patients with a travel history have a high index of suspicion of having contacted the coronavirus at some point, while health workers are considered as high-risk for the disease. The uncertainty in the country and the inadequacy of medical equipment are further worsened in a low-income setting. The concerns are information for health workers on the pandemic, PPE for workers, risk of occupational hazards and insurance in the event of the disease. Fear of the unknown is dominant and could have negative effects on patients and the caregivers. Understanding the primary stressors encountered by hospital personnel (and patients) in this setting enables leadership teams to design interventions and training to proactively reduce and manage stress and to better meet the needs of their staff. This study therefore investigated the knowledge, attitude and effects of the COVID-19 disease on hospital staff from the month of May to June 2020.

2. METHODOLOGY

2.1 Study Area

The study was carried in Port Harcourt the capital of Rivers State, in the Federal Republic of Nigeria.

2.2 Study Place and Period

The study was done at the University of Port Harcourt Teaching Hospital, in the month of May to June 2020.

2.3 Study Design

A cross-sectional descriptive study.

2.4 Study Population

The study population comprises hospital staff who were medical doctors, nurses, pharmacists, laboratory scientists, technicians, administrative staff and students.

2.5 Sample Size Determination

The formula for survey developed by Yaro Yamen based on estimated population of workers at the University of Port Harcourt Teaching Hospital estimated to be 3,500 was used to derive the minimum sample size. Formula: $n = \frac{N}{1+Ne^2}$ where n= minimum sample size, N = Total population size (of hospital staff) and e = desired precision/level of significance, usually 5% (0.05) at 95% Confidence Interval (CI). Hence, n= 4,000/ 1+4,000 X 0.052 = 363.6 being approximately 364. To cater for 10% attrition, we have 10% of 364 = 36; 364 + 36 = 400. Though 500 questionnaires were intended for the survey, only 297 participants consented for the study and hence recruited.

2.6 Sampling Technique Procedure

During this period, certain categories of workers were officially permitted to stay off duty as activities were scaled down. 297 participants were recruited out of 500 questionnaires intended for the study.

2.7 Data Analysis

Information on knowledge, attitude, and effects of the COVID-19 pandemic were collated and analysed using the Statistical Package for the Social Sciences (SPSS) version 20.0.

3. RESULTS

A total of 297 health staff were recruited for the study. The demographic characteristics of the respondents summarized in Table 1. One hundred and sixty-nine (56.9%) respondents were between 25 and 40 years of age and 120 (40.0%) were between 41 and 60 years of age. There were one hundred and twenty-three (41.4%) nurses, 64 (21.5%) doctors, 57 (19.2%) technicians/technologists, and 27 (9.1%) medical laboratory scientist. Two hundred and ninety-one respondents (98.0%) were Christians.

Table 2 shows the respondents' knowledge of Corona Virus pandemic. Two hundred and sixty-two (88.2%) respondents were aware of the Coronavirus pandemic, with 228 (76.8%) respondents indicating their source of information as being through Television/Radio/Newspaper. Two hundred and fifty-one (84.5%) respondents described the coronavirus as a disease caused by germ imported from China.

Two hundred and seventy-two (91.6%) respondents asserted that avoiding shaking hands, touching surface in public places, washing hands and using hand sanitizers as well as avoiding public gathering were ways to prevent being infected with coronavirus disease. Other ways mentioned by respondents to prevent coronavirus disease include: social distancing - fifty-eight (19.5%), wearing face mask – 79 (26.6%), avoiding contact with infected 22 (7.4%), personal hygiene - 66 (22.2%), boosting ones' immune system – 11 (3.7%), keeping faith and prayer – 4 (1.3%), and 57 (19.2%) provided no response.

The attitude of the health staff on COVID-19 pandemic was also assessed as indicated in Table 3. One hundred and two (34.3%) respondents asserted that nurses and doctors were at high risk of the disease. However, 127 (42.8%) agreed with the opinions that nurses and doctors were not just at high risk of the disease, but also working hard to help "us" survive, are too suspicious of patients and are also are doing their work. Regardless of the fear/panic of the COVID-19 pandemic, 230 (77.4%) respondents stressed that they would visit their sick relative in the hospital, although 35 (11.8%) were indecisive. Besides, while 185 (62.3%) asserted that they were certain about life with this coronavirus pandemic.

Table 1. Demographic characteristics of health workers

Variables	S/no	Questions	Values	
			Frequency (1)	Percentage (2)
Age	1	Less than 25 years	6	2.0
	2	25- 40 Years	169	56.9
	3	41 - 60 years	120	40.4
	4	Above 60 years	2	0.7
Sex	1	Female	175	58.9
	2	Male	122	41.1
Marital Status	1	Single	73	24.6
	2	Married	218	73.4
	3	Separated/Divorced	6	2.0
Religion	1	Christianity	291	98.0
	2	Islam	3	1.0
	3	Others	3	1.0
Years in service	1	Less than 1 Year	60	20.2
	2	1-10 years	107	36
	3	11- 20 years	94	31.6
	4	21- 30 years	23	7.7
	5	More than 30 years	13	4.4
Health staff category	1	Surgeons (All Specialists)	32	10.8
	2	Anaesthetist	12	4.0
	3	Physicians (All specialist)	20	6.7
	4	Nurses	123	41.4
	5	Pharmacists	10	3.4
	6	Medical Lab Scientist	27	9.1
	7	Others (Administrative Staff, Technician, Ward Maids)	57	19.2
	8	Students	16	5.4

The effects coronavirus pandemic on the respondents are indicated in Table 4. The personal life of 125 (42.1%) respondents were moderately affected, 62 (20.9%) were severely affected, and 48 (16.2%) were devastated. The family life of 110 (37.0%) respondents were moderately affected 68 (22.9%) were severely affected, and 68 (12.5%) were devastated. Other areas of effect include: friendship - 81 (27.3%) moderately affected, 68 (22.9%) were severely affected, and 37 (12.5%) devastated; social life - 89 (30.0%) moderately affected, 103 (34.7%) severely affected, and 50 (16.8%) devastated; means of livelihood - 76 (25.6%) moderately affected, 63 (21.2%) severely affected, and 43 (14.5%) devastated; feeding - 88 (29.6%) moderately affected, 72 (24.2%) and 37 (12.5%) were affected severely and devastated respectively; Transportation was severely affected in 117 (39.4%) respondents, and 82 (27.6%) respondents were devastated. Ability to cope with challenges of the pandemic was severely affected in 86 (29.0%) respondents, and were devastated in 39(13.1%) respondents.

Additional outcome of the coronavirus pandemic among the health staff is indicated in Table 5. One hundred and sixty-five (55.6%) respondents were of the assertion that there was a positive side of the coronavirus epidemic in Nigeria. Thirty-seven respondents (12.5%) were of the opinion that the COVID-19 pandemic may encourage our politicians to value health and increase health budget, while 12 (4.0%) believed that coronavirus pandemic has improved global awareness on personal hygiene. Two (0.7%) respondents felt it teaches our politicians a lesson and discourages people from travelling abroad for medical treatment respectively. Seven (2.4%) respondents even thought that this pandemic would encourage governments to look for other sources of income to fund project apart from oil. One hundred and twenty-six (42.4%) respondents agreed to all the opinions about probable positive side of the corona virus epidemic in Nigeria. Table 4 presented the relationship between extent at which coronavirus pandemic affected means of livelihood and age of respondents. This relationship was not significant ($P<0.05$).

Table 2. Knowledge of Coronavirus pandemic

Variables	Frequency	Percentage
Heard about Coronavirus before		
Yes	262	88.2
No	34	11.4
Don't know	1	.3
Source of information about Corona Virus Disease		
Hospital	36	12.1
Church/Mosque	3	1.0
Television/Radio/Newspaper	228	76.8
Hospital and media (TV/Radio/Newspaper)	17	5.7
Social media	13	4.4
What Corona Virus Disease is		
A 5G end time anti-Christ disease	8	2.7
Rich man's disease that kills people on television	1	.3
A disease caused by germ imported from china	251	84.5
Don't know	29	9.8
A fatal pandemic disease	8	2.7
How someone can be infected coronavirus		
Through coughing and sneezing by infected person	21	7.1
By shaking hands	2	.7
By touching contaminated surfaces	2	.7
From public gathering	6	2.0
All of the above	266	89.6
How to prevent coronavirus disease		
Avoid shaking hands	3	1.0
Avoid touching surface in public places	3	1.0
By washing hands and using hand sanitizers	16	5.4
Avoid public gathering	3	1.0
All of the above	272	91.6
Other ways to prevent coronavirus disease		
Social distancing	58	19.5
Wearing face mask	79	26.6
Avoid contact with infected person	22	7.4
Personal hygiene	66	22.2
Boost ones' immune system	11	3.7
Keep faith and righteousness	4	1.3
None	57	19.2
Total	297	100.0

4. DISCUSSION

Most of the respondents in this study were Christians and female workers in their youth/middle age. This is not surprising because the population in southern part of Nigeria where the study was conducted is predominantly Christian. Also, the public service environment has relatively restricted working-class age limit, with more female workers as nurses and administrative staff. Additionally, some category of staff especially the older senior cadre were officially advised to stay off duty during the pandemic.

The finding that majority of the workers were aware of the COVID-19 pandemic, and had substantial knowledge of the mode of transmission and preventive measures, seems to agree with the result from other centres [36]. Also, the efforts of governmental and non-governmental national and international organizations in communicating information to the public through print, audio and visual media may have contributed to this knowledge picture. The above efforts, and the institutional unit staff educational programs on the pandemic must have also contributed to the improved knowledge of preventive measures among respondents.

Table 3. Attitude of health workers on COVID-19 pandemic

Variables	Frequency	Percentage
Opinion on Nurses and Doctors during this COVID-19 pandemic		
They are at high risk of the disease	102	34.3
They are working hard to help us survive	30	10.1
They are too suspicious of patients	29	9.8
They are doing their work	9	3.0
All of the above	127	42.8
Visit sick relative in the hospital		
Yes	230	77.4
No	32	10.8
Don't know	35	11.8
Certain about life with this corona virus event		
Yes	185	62.3
No	45	15.2
Don't know	67	22.6
Total	297	100.0

Table 4. Effect of the Corona Virus pandemic

S/No	Variables	No Effect		Mildly		Moderately		Severely		Devastated	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	Personal life	28	9.4	34	11.4	125	42.1	62	20.9	48	16.2
2	Family life	25	8.4	61	20.5	110	37.0	68	22.9	37	12.5
3	Friendship	37	12.5	74	24.9	81	27.3	68	22.9	37	12.5
4	Social life	21	7.5	34	11.4	89	30.0	103	34.7	50	16.8
5	Means of livelihood	56	18.9	59	19.9	76	25.6	63	21.2	43	14.5
6	Feeding	48	16.2	52	17.5	88	29.6	72	24.2	37	12.5
7	Transportation	19	6.4	31	10.4	48	16.2	117	39.4	82	27.6
8	Coping with challenges	22	7.4	57	19.2	93	31.3	86	29	39	13.1
9	Is there positive side of the corona virus epidemic in Nigeria?	Yes				No		I don't Know			
		165	55.6%			75	25.2%	57	19.2%		
10	Lesson for our politicians?	Yes				No		I don't know			
		2	0.7%				-%	-	-		
11	Increase health budget?	Yes				No		I don't Know			
		37	12.5%			-	-%	-	-		
12	Discourages medical treatment abroad	Yes				No		I don't know			
		2	0.7%			-	-%	-	-		
13	Encourage search for other sources of government income	Yes				No		I don't know			
		7	2.4%				-%	-	-		
14	Improved global awareness on personal hygiene	Yes				No		I don't know			
		12	4.0%			-	-%	-	-		
15	All of the above options on positive side of COVID-19	126	42.4%			-	-%	-	-		

Table 5. Relationship between extent at which corona virus pandemic affect means of livelihood and age

	Extent at which corona virus pandemic affect means of livelihood							
Age	Not affected	Mildly	Moderately	Severely	Devastated	Total	(X^2)	P-Value
Less than 25 years	0(0.0%)	0(0.0%)	3(50.0%)	3(50.0%)	0(0.0%)	6	12.077	0.440
25- 40 Years	34(20.1%)	39(23.1%)	39(23.10%)	34(20.1%)	23(13.6%)	169		
41 - 60 years	22(18.3%)	20(16.7%)	33(27.5%)	25(20.8%)	20(16.7%)	120		
Above 60 years	0(0.0%)	0(0.0%)	1(50.0%)	1(50.0%)	0(0.0%)	2		
Total	56	59	76	63	43	297		

Most respondents asserted that nurses and doctors (among the health workers) were at higher risk of the disease. This information is expected as this category of staff spend more time in close contact with patients during their medical care in hospital [37]. The collectivist family bond explains why a high proportion of respondents indicated that they would still visit their sick relative in the hospital, regardless of the fear / panic of the COVID-19 pandemic [38]. Another possible reason for this finding could be that the health workers were already working in, and are familiar with the hospital environment.

The social impact of COVID-19 is high because almost half of the respondents were moderately affected by the COVID-19 pandemic while at least one-fifth were devastated in all assessed strata-personal life, family life, friendship, social life, feeding, transportation, means of livelihood, and ability to cope with challenges of the pandemic. These findings are similar to previous studies, [39,40] emphasizing the direct effect of the pandemic on individuals and families. The highly infectious nature of the disease coupled with the public health preventive measures, especially social distancing disrupted almost all facets of society thereby hindering social life.

Almost half of the respondents believed that there was a positive side of the coronavirus epidemic in Nigeria. This may reflect the perceptions of a people who have had failed high expectation from their political leaders in areas of improved health value and increase health budget with consequent expected reduction in medical tourism abroad [41]. Although, it appeared some age groups were affected more than the others, there was a collective impact on all age group.

Limitation of the study is partly that it is a questionnaire-based and the sample size which though suboptimal, was used to obtain needed information considering the necessity of the time. This study expressed the opinion of workers, there is need to further study and highlight the impact of the pandemic from institutional administrative point of view in a study that should be conducted among heads of departments or hospital management committee officials. This study is also hospital-based in setting, a similar none hospital-based study may provide more information on the impact of the pandemic for comparative purposes.

5. CONCLUSION

The fear of the COVID-19 pandemic did not deter a high proportion of the respondents from visiting their sick relative in the hospital – typical of the collectivist family bond. The personal life, family life, friendship, social life, feeding, transportation, means of livelihood, and ability to cope with challenges of the pandemic, have all been significantly affected in varied proportions – moderately, severely, and in devastated manner. The level of awareness of the coronavirus pandemic was generally high with improved knowledge of preventive measures among respondents. Nurses and doctors (among the health workers) were considered to be at higher risk of the disease. There was a strong perception among almost half of respondents that there was a positive side of the coronavirus epidemic in Nigeria.

CONSENT

All the workers who were present at the tertiary health facility and gave consent were recruited for the study using the convenience sampling method.

ETHICAL APPROVAL

The approval of the Research Ethics Committee of the University of Port Harcourt Teaching Hospital was obtained.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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