Original Article

THE NHIS-BASED HEALTH WORKFORCE: AN EXPLORATION OF THEIR KNOWLEDGE AND PERCEPTION OF COVID-19.

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ABSTRACT

Aim: The knowledge and perception of COVID-19 was assessed amongst healthcare workers in the National Health Insurance Scheme (NHIS) clinic of a tertiary hospital in Nigeria.

Methods: This was a descriptive cross-sectional study conducted amongst healthcare workers in the National Health Insurance Scheme (NHIS) clinic of a tertiary hospital in Nigeria, which offers outpatient primary care services to enrollees on the National Health Insurance Scheme of Nigeria. A pre-tested semi-structured questionnaire was used to obtain data from the participants. Data analysis was done using the IBM SPSS Statistics version 22.0 (Chicago, IL, USA) statistical software.

Results: There were 49 study participants with 22 males and 27 females (M:F = 1:1.2). The mean age was 35.5±8.6years. All the study participants were aware of COVID-19 with television being the highest source of information on COVID-19, followed by the internet and social media. Majority of the respondents had fair knowledge of COVID-19 (n=25, 51.1%). Only occupation (p=0.03) was significantly associated with knowledge of COVID-19. Majority of the respondents believed COVID-19 is real.

Conclusion: Whereas all the study participants were aware of COVID-19, most of them had fair knowledge of the disease and believed COVID-19 is real.

Keywords: COVID-19, Healthcare worker, Knowledge, NHIS clinic, Perception.

INTRODUCTION

Many countries and regions of the world are contending with the challenges posed by a novel coronavirus. The virus, named SARS-CoV-2,[1] is the causative virus for Coronavirus disease 2019 (COVID-19),[1] and was first reported to the World Health Organization by the Chinese Health Commission following the outbreak of cases of severe pneumonia amongst inhabitants of Wuhan city in Hubei province of China in December, 2019.[2] Since its emergence, SARS-CoV-2 has spread to many countries and regions outside China, with virtually all countries recording varying numbers of COVID-19 cases. The increase in the number of cases and spread to other countries outside China prompted the World Health Organization (WHO) to respectively declare COVID-19 a public health emergency of international concern (PHEIC) on the 30th of January, 2020,[3] and a pandemic on the 11th of March, 2020.[4] As at November 3, 2020, there were 47, 565, 476 recorded cases, globally, with 1, 214, 809 deaths.[5] Out of these global figures, Africa which recorded its first case of COVID-19 on February 14, 2020,[6] accounts for about 3.8% (1,802,351) of the globally confirmed cases and about 3.6% (43,421) of the global deaths.[7] As at the same date (November 3, 2020), there were 63, 036 confirmed cases of COVID-19 in Nigeria, and 1, 147 deaths.[8]

In terms of its mode of transmission, Coronavirus disease (COVID-19) is commonly spread through

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respiratory droplets from infected individuals or contact with infected objects or surfaces with the contaminated hand used to touch the mouth, eyes, or nose.[9] The common symptoms of the disease include fever, sore throat, dry cough, difficulty with breathing, fatigue, malaise, and myalgia.[10] Others include Anosmia, Aguesia, e.t.c.[10] Though a majority of the patients present in mild states, the disease could also be severe with complications such as acute respiratory distress, septic shock, metabolic acidosis, bleeding and coagulation dysfunction.[10] Infection Prevention and Control practices and other public health measures (such as public health education, respiratory and hand hygiene, social distancing, use of face mask in public, especially by health workers and care givers of COVID-19 patients, e.t.c.) have thus far, constituted the mainstay of prevention and management efforts.[11] This is due to the fact that there is currently no proven drug or vaccine for managing or preventing COVID-19.[12]

It is known that an individual's knowledge of a disease influences the individual's perception of the disease and his/her attitude towards it,[13] and probably the individual's adoption of preventive and promotive disease management strategies. This fact also holds true for healthcare workers (HCWs), who have been reported to be at a particularly high risk of being infected with SARS-CoV-2, on account of their direct exposure to COVID-19 patients, amongst other factors.[14] Knowledge of the disease may influence the attitudes and practices of HCWs, with reduction in their risk of contracting the disease.[15] Being critical players in the global efforts to contain COVID-19, it is imperative that efforts are directed at measures aimed at preventing and controlling the spread of infection to healthcare workers. These measures include improving the knowledge of HCWs through provision of health education and training programs on COVID-19. However, it is important to first assess HCWs' knowledge and perception of COVID-19. It is for this reason that this study aimed at assessing the knowledge and perception of healthcare workers in a health insurance-based primary care clinic, was deemed necessary.

METHODOLOGY

This was a descriptive cross-sectional study conducted in the month of June, 2020, during the COVID-19 pandemic. The study was conducted amongst healthcare workers (Medical doctors, Nurses, Pharmacists, Medical Laboratory Scientists, and other allied health professionals and health workers) working in the National Health Insurance Scheme (NHIS) clinic of the University of Benin Teaching Hospital (UBTH), which offers outpatient first contact/primary care services to enrollees on the National Health Insurance Scheme of Nigeria.

A pretested semi-structured questionnaire was used to obtain data on the socio-demographic characteristics (age, gender, marital status, etc.) of the study participants. It was also used to obtain data on their knowledge and perception of coronavirus disease (Covid-19).

Knowledge was assessed by questions focusing on COVID-19 etiology, transmission, signs and symptoms and treatment. There were 29 knowledge questions and each correct response was scored "1" and wrong response was given no score, with scores ranging from 0 to 29. A cut-off level of <15 was considered to indicate poor knowledge about COVID-19 while 15-22 and >22 were considered fair and good knowledge about COVID-19 respectively. Perception was assessed using a series of 10 Likert-scale questions with 5 options (Strongly agree, Agree, Undecided, Disagree, and Strongly disagree).

All data obtained from the study were validated, coded and analysed using the IBM SPSS Statistics version 22.0 (Chicago, IL, USA). Descriptive statistics such as mean and standard deviation (SD) were used to present numerical data, while frequency (number) and percent were used to present categorical (qualitative) data. Chi-square test was used to compare qualitative variables.

Ethical clearance was obtained from the Health Research Ethics Committee of the University of Benin Teaching Hospital. Informed written and voluntary consent was obtained before recruiting any participant. The purpose, procedure, and benefits of the study were explained to the participants. They were informed that the study had no attendant adverse effects or risks. They

were also informed of their rights to refuse participation in the study, as well as their right to withdraw at any time during the study, without any negative consequences.

All the data obtained from the participants were kept strictly confidential and used solely for the purpose of the research study. To ensure confidentiality, the participants' names and other means of identification were not used during the research. Instead the questionnaires were given coded means of identification. Similarly, the hardware for the storage of data was pass-worded to prevent unauthorized access.

RESULTS

Forty-nine healthcare workers (HCWs) in the National Health Insurance Scheme (NHIS) clinic of University of Benin Teaching Hospital (UBTH) participated in this study out of a total of 50 healthcare workers employed in the clinic, giving a response rate of 98%. The mean age of respondents was 35.5 ± 8.6 years, with those aged 25-45 years making up most of the participants (77.6%). Majority of the respondents were females (55.1%), married (63.3%), had tertiary education (87.8%) and had practiced in their current place of work for less than 2 years (44.9%). No respondent had primary level of education and all were Christians. Pharmacists were the most prevalent healthcare workers (28.7%) followed by medical doctors (26.5%) (**Table 1**).

All respondents stated that they were aware of COVID-19, with television being the highest source of information (75.5%), followed by the internet (67.3%) (**Table 2**). As shown in table 3, on self-assessment of respondents' knowledge of COVID-19, only 8.2% thought they had excellent knowledge, while 38.8% felt they had good knowledge of COVID-19. Most participants understood COVID-19 to be an acute respiratory illness (91.8%) and knew that the disease is caused by a virus (93.9%), but only about a third (34.7%) knew the name of the virus to be SARS-COV-2. About 79% of participants reported that the average incubation period of the coronavirus disease is 2-14 days. Inhalation of respiratory droplets was the highest mode of transmission picked by the respondents (91.8%), while only 30.6% picked eating contaminated food or water. A vast majority of the respondents stated that breathlessness (98.0%), cough (87.8%), fever (77.6%) and sore throat (69.4%) were symptoms of COVID-19, while only 10.2% thought runny nose was a symptom. Concerning the treatment of COVID-19, majority of the respondents knew there is no approved drug or vaccine (61.2%).

Figure 1 shows the distribution of knowledge grade among respondents. Majority had fair knowledge (51.1%), while only 22.4% had good knowledge about COVID-19. Table 4 showed that only occupation had a significant association with respondents' knowledge (p=0.03). Majority of medical doctors had good knowledge of COVID-19 (61.5%), while majority of the record staff had poor knowledge of COVID-19 (66.7%). More males were seen to have good knowledge score (27.3%) versus 18.5% females, this was however not statistically significant (p=0.180).

This study showed that almost all the respondents (98.0%) believed COVID-19 is real, while only 2.0% were not sure (Figure 2). Majority of health workers in this study strongly agreed that COVID-19 is highly contagious (61.2%), that health workers should be given special compensation and health insurance (85.7%), and that they should be given priority in the screening and treatment for COVID-19 (67.3%). (**Table 5**)

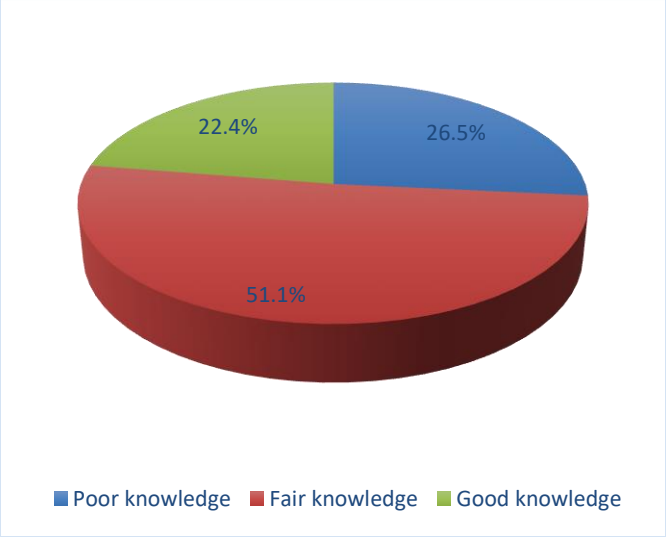

Figure 1: Overall knowledge grade of COVID-19 among respondents

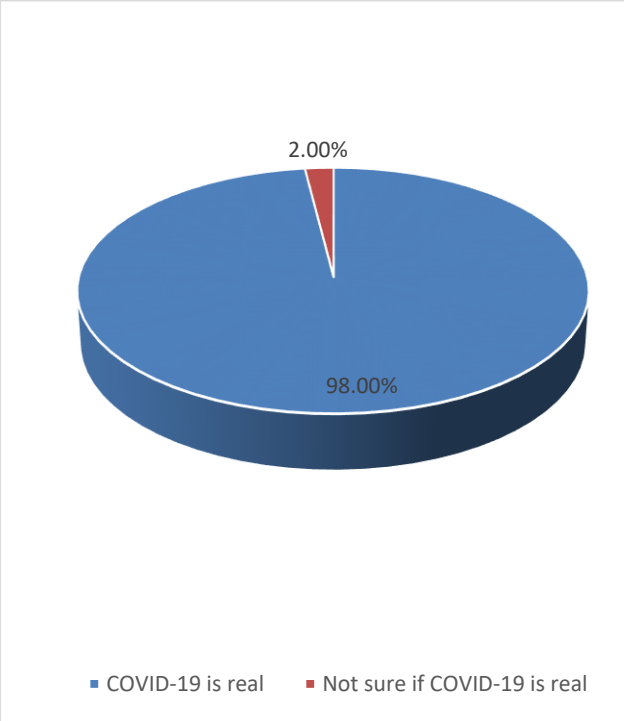

Figure 2: Reality of COVID-19.

Table 1: Socio-demographic characteristics of respondents

Socio-demographic characteristic	Frequency (N=49)	Percentage (%)
Age (years)		
<25	4	8.2
25-45	38	77.5
>45	7	14.3
Mean ± standard deviation	**35.5 ± 8.6**	
Gender		
Male	22	44.9
Female	27	55.1
Marital status		
Single	17	34.7
Married	32	65.3
Religion		
Christianity	49	100.0
Islam	0	0.0
Traditional religion	0	0.0
Occupation		
Medical doctor	13	26.5
Nurse	10	20.4
Pharmacist	14	28.7
Record staff	9	18.4
Others	3	6.0
Level of education		
Primary	0	0.0
Secondary	6	12.2
Tertiary	43	87.8
Length of practice (years)		
<2	22	44.9
2-10	20	40.8
>10	7	14.3

Others: CHEW, Medical laboratory scientist, Technician

Table 2: Awareness and sources of information of COVID-19 among respondents

Variable	Frequency (N=49)	Percentage (%)
Awareness of covid-19		
Yes	49	100.0
No	0	0.0
Sources of information [a]		
Television	37	75.5
Internet	33	67.3
Newspapers	28	57.1
Socio-media	28	57.1
Colleagues	20	40.8
Government press release	20	40.8
Family/relatives	16	32.7
Friends	16	32.7
Hospital press release	14	28.6
Radio	14	28.6
Seminars/workshop	9	18.4
Magazines	6	12.2
Celebrities	5	10.2
Scientific journal	4	8.2
My association/union	2	4.1

a: multiple responses

Table 3: Respondents knowledge of COVID-19

Variable	Freq.	%
Self-assessment of knowledge		
Excellent	4	8.2
Very good	18	36.7
Good	19	38.7
Fair	4	8.2
Poor	4	8.2
What do you understand by COVID-19?		
Acute neurological disease	1	2.0
Acute gastrointestinal disease	0	0.0
Acute respiratory illness	45	91.8
Acute renal disease	3	6.2
Which agent causes COVID-19?		
Bacteria	0	0.0
Malaria parasite	2	4.1
Virus	46	93.9
Fungi	0	0.0
I don't know	1	2.0
What is the specific name of the agent responsible for COVID-19?		
SARS-COVn1	8	16.3
SARS-COVn2	3	6.1
SARS-COV-1	2	4.1
SARS-COV-2	17	34.7
I don't know	19	38.8
Average incubation period of COVID-19		
2-12days	2	4.1
2-14days	39	79.6
1-13days	2	4.1
I don't know	6	12.2
Mode of transmission [a]		
Inhalation of respiratory droplets	45	91.8
Contact with infected individuals	38	77.6
Touching contaminated objects or surfaces	35	71.4
Eating contaminated food or water	15	30.6
None of the above	1	2.0
I don't know	0	0.0
Symptoms of COVID-19 [a]		
Fever	38	77.6
Cough	43	87.8
Breathlessness	48	98.0
Sore throat	34	69.4
Runny nose	5	10.2
Stuffy nose	22	44.9
Sneezing	16	32.7
Headaches	20	63.3
Muscle ache/body pains	21	42.9
Fatigue	21	42.9
Diarrhoea	16	32.7
Loss of taste	19	38.8
Loss of smell	23	46.9
Concerning treatment of COVID-19 [a]		
There is an approved drug for treatment	9	18.4
There is an approved vaccine	3	6.1
There is both an approved drug and vaccine	1	2.0
There is no approved drug or vaccine	30	61.2
Can be treated with antibiotics alone	4	8.2
I don't know	7	14.3

a: multiple response
Freq. - Frequency

Table 4: Distribution of respondents' knowledge score on COVID-19 by their sociodemographic characteristics

Sociodemographic characteristics	Knowledge score [a]			Test statistic/p value
	Good N=11(22.4%)	**Fair N=25 (51.1%)**	**Poor N=13(26.5%)**	
Age (years)				Fisher's exact= 4.203
<25	1 (25.0)	3 (75.0)	0 (0.0)	p=0.379
25-45	10 (26.3)	18 (47.4)	10 (26.3)	
>45	0 (0.0)	4 (57.1)	3 (26.5)	
Gender				Fisher's exact= 3.429
Male	6 (27.3)	13 (59.1)	3 (13.6)	p=0.180
Female	5 (18.5)	12 (44.4)	10 (37.0)	
Marital status				Fisher's exact= 3.108
Single	4 (23.5)	11 (64.7)	2 (11.8)	p=0.211
Married	7 (21.9)	14 (43.8)	11 (34.4)	
Occupation				
Medical doctor	8 (61.5)	5 (38.5)	0 (0.0)	Fishers' exact=
Nurse	0 (0.0)	7 (70.0)	3 (30.0)	26.559
Pharmacist	2 (14.3)	8 (57.1)	4 (28.6)	p=0.030*
Record staff	1 (11.1)	2 (22.2)	6 (66.7)	
Others	0(0.0)	3 (100)	0 (0.0)	
Level of education				Fishers' exact= 4.222
Secondary	1 (16.7)	3 (50.0)	2 (33.3)	0.895
Tertiary	10 (23.3)	22 (51.2)	11 (25.6)	
Length of practice (years)				
<2	5 (22.7)	13 (59.1)	4 (18.2)	Fishers' exact= 4.261
2-10	6 (30.0)	8 (40.0)	6 (30.0)	p= 0.372
>10	0 (0.0)	4 (57.1)	3 (42.9)	

a: knowledge score ranged from 0 to 29. Good= >22; fair =15-22; poor= <15
Others: CHEW, Medical laboratory scientist, Technician
*Statistically significant

DISCUSSION

The mean age and the prevalent age group of the respondents in this study is similar to that reported in a previous Nigerian study.[13] Females were found to constitute the majority of healthcare workers in this study, similar to what was found in some previous studies.[13,16] All the study participants had some form of education, either secondary or tertiary, with none with a primary level of education as his/her highest level of education. This is not surprising as healthcare workers are expected to possess good level of education and competence. Furthermore, individuals employed in government owned (public) institutions in Nigeria are required to possess a minimum of a secondary school leaving certificate.

All the respondents in this study were aware of COVID-19 agreeing with findings in a similar study.[16] This high level of awareness is commendable as it helps health care workers (HCWs) seek appropriate information about the novel disease. Major sources of information among respondents were television and internet. This finding was also reported in a study done in Libya[17] but is however inconsistent with a similar study conducted in Nigeria[13] which reported colleagues and social media as major sources of information. The present study shows that HCWs are more disposed to the use of television, internet, and social media as sources of information on an emerging infectious disease like COVID-19, rather than through more reliable sources such as seminars/workshops, scientific journals or press release of health authorities. The aforementioned cannot be over emphasized as the litany of unverified information on internet and the social media could mislead healthcare workers. It is therefore recommended that HCWs should carefully cross-check and evaluate sources of information about COVID-19. It is further recommended that consolidated efforts should be

Table 5: Respondents' perception of COVID-19

	Strongly agree N (%)	Agree N (%)	Undecided N (%)	Disagree N (%)	Strongly disagree N (%)
COVID-19 is highly contagious	30 (61.2)	11 (22.4)	6 (12.2)	1 (2.00	1 (2.0)
I don't feel safe at my workplace due to lack of adequate preventive measures	11 (22.4)	20 (40.8)	10 (20.4)	6 (12.2)	2 (4.1)
Health workers should be provided a special compensation and health insurance against COVID-19	42 (85.7)	6 (12.2)	0 (0.0)	0 (0.0)	1 (2.0)
Health workers should be given priority in the screening and treatment for COVID-19	33 (67.3)	11 (22.4)	2 (4.1)	3 (6.10	0 (0.0)
Our hospital management is not committed to adequate protection of staff against COVID-19	6 (12.2)	9 (19.4)	16 (32.7)	14 (28.6)	4 (8.2)
Chloroquine can cure COVID-19	0 (0.0)	5 (10.20	29 (59.2)	5 (10.2)	5 (10.2)
Herbal and traditional medicine can cure COVID-19	1 (2.0)	3 (6.1)	27 (55.1)	16 (32.7)	5 (10.2)
Garlic, lemon and ginger can cure COVID-19	1 (2.0)	6 (12.2)	21 (42.9)	16 (32.7)	5 (10.2)
COVID-19 can be cured spiritually without medication	3 (6.1)	10 (20.4)	11 (22.4)	12 (24.5)	13 (26.5)
I don't have confidence in the Governments' handling of the fight against COVID-19	5 (10.2)	16 (32.7)	14 (28.6)	7 (14.3)	7 (14.3)

focused on regular and updated health education and training programmes/seminars on COVID-19 for healthcare workers.

Most of the respondents in this study showed good knowledge of the causative organism of COVID-19, mode of transmission, common symptoms, and treatment of the disease. Similar findings were reported in other studies.[18,19] Overall, most of the respondents had fair knowledge, while only 22.4% had good knowledge of COVID-19. This may be because only a minority of the respondents reported they had received training on COVID-19 in similarity with a study in Libya.[17] Adequate knowledge of COVID-19 among healthcare workers will promote infection prevention and control practices. A significant finding from the present study was that medical doctors had better knowledge of COVID-19 than other cadres of healthcare workers. This may be explained by the fact that medical doctors are active participants in educational and training activities, and frequently update their knowledge due to their active role in improving outcomes of treatment of patients infected with the disease. This finding was however contrary to similar studies done which showed pharmacist had better knowledge of the disease.[20,21]

Similar to findings in another study, majority of the study participants believed that COVID-19 is real and very contagious. This perception of the healthcare workers in this study can serve as a positive reinforcer for their search for credible information and knowledge about COVID-19, as well as their attitude towards the prescribed precautionary/preventive measures.[13,14] Also similar to what was found in a previous study,[13] the respondents in this study were of the view that healthcare workers should be given special compensation and health insurance/indemnity cover.

In conclusion, healthcare workers in this study were aware of COVID-19. Most of the respondents believed that COVID-19 is real and very contagious, and had fair knowledge of the causative organism, mode of transmission, common symptoms and treatment of the disease.

This study involved only healthcare workers in the National Health Insurance Scheme (NHIS) clinic of the University of Benin Teaching Hospital. The findings from this study are therefore unlikely to be reflective of healthcare workers in various National Health Insurance Scheme (NHIS) clinics in Nigeria or the general population of healthcare workers in Nigeria. Despite its limitation, this study has provided useful insights which can be leveraged on for further studies, as well as training of healthcare workers.

It is recommended that continuous medical education/professional development and training programs/seminars should be organized for healthcare workers, especially allied health workers, to update their information and knowledge about the disease. It is also recommended that further studies, preferably multi-centre studies should be undertaken.

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