PHYSIOTHERAPISTS' KNOWLEDGE, ATTITUDE AND WILLINGNESS TO CARE FOR COVID-19 PATIENTS: A NATIONWIDE SURVEY IN NIGERIA

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Abstract

Introduction: COVID-19 requires an all-inclusive task sharing/shifting approach by clinical professions in order to stem the tide of the pandemic. Physiotherapists have, therefore, potential for front line duties to COVID-19 patients as part of their traditional role in acute care for patients with respiratory complications. This study assessed the knowledge, attitude, and willingness of physiotherapists to care for patients with COVID-19 at the onset of the pandemic.

Method: An electronic (WhatsApp) survey of 210 licenced physiotherapists was conducted from March 2020 to July 2020 using an adapted questionnaire from a previous validated tool. Data was analysed using descriptive and inferential statistics. The level of statistical significance was set at p < 0.05.

Results: The physiotherapists displayed a high level of awareness (99.0%) about COVID-19, and the social media (96.2%), especially WhatsApp (74.8%), was the main source of information on COVID-19. 28.6% of the respondents had a sufficient level of knowledge of COVID-19. The knowledge about COVID-19 was significantly influenced by educational qualifications (p = 0.00). Also, 77.1%, 74.8% and 87.1% of the respondents were willing to provide care for patients with COVID-19, be part of front-line care team, and care for COVID-19 survivors, respectively. Conclusion: Nigerian physiotherapists displayed an appreciable level of knowledge of COVID-19 at the onset of the pandemic. The surveyed physiotherapists were also willing to provide care for COVID-19 patients and survivors, as well as to be part of the COVID-19 front-line care team for.

Key words: COVID-19, knowledge, attitude, willingness, physiotherapists

Introduction

The advent of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in 2020 had a significant impact on the economies and health standards of most governments, societies, organisations, and individuals, with little or no preference to age or gender [1]. Initially called 2019-nCoV, it was declared a public health emergency of international concern with a "very high" risk assessment by the World Health Organisation (WHO), which then assigned it the name coronavirus disease 2019 (COVID-19) and declared it a pandemic with a varying fatality rate across different age groups and countries [1-3]. The COVID-19 clinical presentation spectrum varies from mild to severe manifestations. Its mild presentation commonly involves fever, fatigue, dry cough, loss of taste or smell as well as skin rash and

discoloration of fingers or toes as recently added by the National Health Service of the United Kingdom [4, 5]. The severe form of COVID-19 is manifested by dyspnoea with absence of or mild pneumonia. Respiratory failure, septic shock, and multi-organ dysfunction/failure are present in the critical form of the disease [5].

As an ongoing pandemic COVID-19 has affected over 208 countries, areas or territories, with the United States, Brazil and Canada having the highest numbers of confirmed cases, followed by the economic power houses of Europe (France, Germany, Russia, United Kingdom, Italy, Spain), Asian countries (India, Republic of Korea, Thailand, Philippines, China), Middle East countries (Iran, Israel, Iraq, Jordan), and South Africa and Morocco reporting the highest numbers of confirmed cases in Africa [6]. A total of more than half a billion confirmed cases worldwide with more than six million deaths had been recorded as of 5:22 pm CEST, 17 April 2022, according to a WHO situation report [6]. In Africa, the number of confirmed cases of COVID-19 and deaths has increased rapidly to more than five million, and the number of deaths to hundreds of thousand deaths, with Nigeria being among the five countries with the greatest number of cases and deaths in the region [6].

The wide geographic spread of COVID-19 was a result of initial misconceptions about the disease, managing it as a form of mild pneumonia as well as its rapid human to human transmission [7]. Case management has been one of the pillars of the strategic preparedness and response plan released by the WHO on February 3, 2020 [8].

Healthcare professionals have since explored different areas in which they can contribute to the care of COVID-19 patients. Also the availability of rapidly developed and tested vaccines has brought a reprieve to the COVID-19 pandemic and its consequences [9, 10].
Physiotherapists as healthcare professionals play frontline roles in task sharing and shifting as way of providing care for COVID-19 patients [11]. In addition to their traditional specialist roles in respiratory care for ICU patients in

critical condition, physiotherapists also fulfil secondary roles in caring for patients recuperating from COVID-19 active infections. Furthermore, the physiotherapists' role is evident in the sub-acute and rehabilitation phases in COVID-19 survivors with respiratory impairments. In particular, physiotherapeutic interventions in COVID-19 patients are aimed at retraining the breathing pattern, improving respiratory and cardiovascular capacity, increasing muscle strength, and reintegrating patients into activities of daily living using close contact procedures of mobilisation, exercise therapies, and rehabilitation means [12, 13].

However, in the face of increasing number of cases, multiple reports of infections, and deaths among health professionals worldwide as well as limited availability of personal protective equipment (PPE), especially in low-and-middle income countries such as Nigeria, an unsettling panic and disquieting have rattled the community of healthcare professionals. With regard to the increasing number of COVID-19 cases in Nigeria, most recently among the frontline staff, there have been speculations and anecdotal reports of unwillingness of some healthcare professionals, including physiotherapists, to treat COVID-19 patients. However, the knowledge of, attitude to and willingness of physiotherapists to treat COVID-10 patients in Nigeria have not been thoroughly investigated to date. The present study assessed the knowledge, attitude, and willingness of Nigerian physiotherapists to care for patients with COVID-19.

Materials and methods

An online cross-sectional WhatsApp survey was conducted from March to July 2020 among 210 physiotherapists practicing in Nigeria. Based on the United Nations Development Programme WhatsApp Surveying Guide [14] the spread and representativeness of the study population was improved first by identifying physiotherapy professional associations' WhatsApp platforms and contacts across Nigeria; and then by sending and re-sending the survey links by focal persons from these contacts. The professional platforms included WhatsApp

platforms of the Association of Academic and Clinical Physiotherapists of Nigeria (ACAPN), Nigeria Society of Physiotherapy (NSP), State Physiotherapy Associations, Specialty Groups as well as alumni of Nigerian universities practicing in Nigeria.

Ethical approval for the study was obtained from the Health Research and Ethics Committee of the Institute of Public Health (HREC), Obafemi Awolowo University, Ile-Ife, Nigeria. The purpose of the study was provided on the consent page on which the respondents implied their consent to fill in the online questionnaire. Cochran's sample size formula for proportions was used to the sample size [15], which showed that 138 participants will be required for the study. To account for attrition 10% of the sample size was added; hence, the total study sample size amounted to 150 physiotherapists.

Instrument

The instrument used in this study was the electronic version of a self-structured questionnaire assessing the knowledge, attitude, and willingness of physiotherapists to care for patients with COVID-19. The questionnaire was adapted from an earlier tool assessing the knowledge, practice and attitude of physiotherapists to prevention and care for patients with Ebola Virus Disease by Mbada et al. [16]. The respective questionnaire sections related to prevention and care for patients with Ebola Virus Disease had been altered to align with the present study. The adapted questionnaire consisted of 58 items in 3 sections. Section A included respondents' socio-demographic characteristics; Section B included data on respondents' knowledge of prevention and medical care related to COVID-19; and Section C assessed respondents' attitudes and willingness to care for patients with COVID-19. The face and content validity of the questionnaire were tested by public health and physiotherapy experts. The questionnaire internal consistency was calculated using Cronbach's alpha (α): α = k (1-∑Si2/ST2) ÷ k-1, where k = number of items in the questionnaire, Si2 = the total variance of the individual scores of the questionnaire, ST2 = the variance of the total score formed by summing all the items [17]. With k = 58, Si2 = 3.57, and ST2 = 12.74, the value of α amounted to 47(1-3.57/12.74) ÷ 58-1 = 47(1-0.28) ÷ 57 = 0.73, i.e. Cronbach's alpha (α) of 0.73 was obtained for the questionnaire.

Data analysis

The data analysis used descriptive statistics of means, standard deviation, and percentages. A chi-square analysis was used to determine associations among socio-demographic factors and each of the categorical descriptions of knowledge, attitude and willingness to care for patients with COVID-19. The statistical analysis was performed using the Statistical Package for Social Sciences (IBM SPSS 22). The alpha level was set at p ≤ 0.05.

Results

Two hundred and ten physiotherapists, mostly male (64.8%) and below 30 years of age (59.5%) took part in the online survey (Table 1). The majority of respondents worked as physiotherapists (34.8%) in teaching hospitals (36.2%), mostly specialising in Orthopaedics /Musculoskeletal (30.0%), with work experience between 1 and 5 years (62.4%) (Table 1). Table 2 includes data on COVID-19 awareness among the physiotherapists in Nigeria: 99.0% of the respondents heard of the coronavirus, while 84.3% of them knew the phone number to report a suspected case of COVID-19 or ask questions about COVID-19. Most of the respondents indicated social media (96.2%), mainly WhatsApp (74.8%), as their source of information on COVID-19, and 59.0% considered the WHO to be the most reliable source of information about COVID-19.

Table 1. Respondents' sociodemographic profile

Variable	Frequency	Percentage (%)
Age		
below 30	125	59.5
31-40	50	23.8
41-50	19	9.0
51 and above	16	7.6
Sex		
Male	136	64.8
Female	74	35.2
Marital Status		
Single	124	59.0
Married	84	40.0
Highest Educational Qualification		
BSc/BMR/BPT	140	66.7
MSc	53	25.2
PhD	17	8.1
Years of Experience		
1-5	131	62.4
6-10	33	15.7
11-15	16	7.6
16-20	8	3.8
21-25	11	5.2
26-30	7	3.3
more than 30	4	1.9
Place of Work		
State Hospital	31	14.8
Teaching Hospital	76	36.2
FMC	13	6.2
University	28	13.3
Private practice	52	24.8
Specialist	10	4.8
Present status in physiotherapy		
Recent Graduate	23	11.0
Intern	35	16.7
Physiotherapist	73	34.8
Senior physiotherapist	17	8.1
Principal physiotherapist	14	6.7
Chief physiotherapist	6	2.9
Directorate	22	10.5
Lecturer (I & II)	13	6.2
Senior Lecturer	2	1.0
Professional Faculty (Reader and Professor)	5	2.4
Area of specialization		
Neurology	37	17.6
Women's Health	3	1.4
Paediatrics	20	9.5
Orthopaedics	63	30.0
Geriatrics	10	4.8
Community Physiotherapy	10	4.8
Obstetrics & Gynaecology	3	1.4
Cardiopulmonary	12	5.7
General practice	46	21.9
Ergonomics/Sport	6	2.9

Table 2. Respondents' awareness of COVID-19

No.	Questionnaire item	Yes (%)	No (%)
1.	**Have you ever heard of the coronavirus?**	99.0	1.0
2.	**Do you believe COVID-19 exists in Nigeria?**	99.0	1.0
3.	**Do you know which phone number to call to report a suspected COVID-19 case or ask questions about COVID-19?**	84.3	15.7
4.	**What is your main source information about COVID-19?**	%	
	social media	96.2	
	news media	83.8	
	church/mosque/community meeting	38.6	
	public announcements	36.2	
	professional seminars	9.0	
	workplace circulars	6.2	
5.	**In your opinion, what is the most reliable source of information about COVID-19?**	%	
	WHO	59.0	
	NCDC	26.7	
	health/medical professionals	6.7	
	news media	5.7	
	social media	1.9	
6.	**Type of social media?**	%	
	WhatsApp	74.8	
	Facebook	38.1	
	YouTube	31.9	
	Twitter	30.5	
	Instagram	20.0	
	Yahoo	8.6	
	LinkedIn	6.7	
	Telegram	1.9	
7.	**Type of news media?**	%	
	radio/TV	73.3	
	news websites	55.2	
	smartphone news app	49.0	
	newspapers	31.4	
	newsletters	11.9	
	magazines	4.8	

Table 3 shows the respondents' state of knowledge on COVID-19: 43.3% responded correctly that COVID-19 was not an airborne disease; 29.5% asserted there was currently no cure for COVID-19; and 20.0% believed that chloroquine had been approved for COVID-19 treatment. Meanwhile, only 9% of respondents agreed that techniques such as breathing exercises and incentive spirometry were not indicated in the acute phase management of severe COVID-19 cases, but 83.3% confirmed they knew that early mobilisation of patients was essential for quick recovery of COVID-19 patients. Based on the knowledge summation score, 28.6%, 22.4% and 49.0% of the respondents had sufficient knowledge, fair knowledge, and insufficient knowledge, respectively, about the role of physiotherapy in COVID-19. Table 4 presents the study findings on respondents' attitude towards COVID-19: 77.1% would wash their hands with soap and water, and 75.2% would use alcohol-based hand rub (sanitizer) in the absence of soap and water; 46.2% would reduce exits from patients' cubicles during treatment sessions; 79.5% would dispose of PPE after use; and 76.2% would clean and decontaminate mobilisation and exercise equipment after single patient use.

Table 3. Respondents' knowledge of COVID-19

No.	Item	Percentage of respondents who gave the correct answer n (%)
1.	COVID-19 is not an airborne disease.	91 (43.3%)
2.	Staying at home is the best method of curbing the spread of the disease.	187 (89.0%)
3.	Regular hand washing with soap and water will reduce the risk of infection.	199 (94.8%)
4.	Coughing or sneezing into your elbow will reduce the spread of the disease.	152 (72.4%)
5.	Alcohol-based hand-rub will reduce the risk of infection.	145 (69.0%)
6.	Steam inhalation of garlic and ginger solution, drinking hot lemon, gargling with warm water and salt cannot prevent COVID-19.	112 (53.3%)
7.	Drinking alcohol and smoking cannot reduce the risk of COVID-19 contagion.	190 (90.5%)
8.	Maintaining at least a 1 metre distance from an infected person will reduce the spread of COVID-19.	155 (73.8%)
9.	Summer weather does not reduce the coronavirus transmission.	96 (45.7%)
10.	Shaking hands or other physical contact with an infected person increases the spread of COVID-19.	192 (91.4%)
11.	Intake of antibiotics does not prevent or cure COVID-19.	172 (81.9%)
12.	COVID-19 does not affect women more than men.	153 (72.9%)
13.	Older adults are at more risk of contracting COVID-19 compared to the young population.	135 (64.3%)
14.	Close relations are more at risk of contracting COVID-19.	148 (70.5%)
15.	It is possible to contract COVID-19 from a person who is infected but does not have any symptoms.	189 (90.0%)
16.	A person who has been in direct contact with the coronavirus must be quarantined for two weeks.	191 (91.0%)
17.	COVID-19 is currently incurable.	62 (29.5%)
18.	A suspected infected person reduces the chances of the spread of COVID-19 by immediately going to hospital.	137 (65.2%)
19.	A suspected person with COVID-19 has higher chances of surviving, if he/she goes immediately to a health facility.	161 (76.7%)
20.	A person that has been diagnosed with COVID-19 should be admitted to an isolation centre.	181 (86.2%)
21.	Chloroquine is an approved drug for COVID-19 treatment.	42 (20.0%)
22.	Medical personnel must wear PPE before attending to a patient with COVID-19.	194 (92.4%)
23.	Mild symptoms of COVID-19 include fever, malaise, productive or non-productive cough, and joint pain.	168 (80.0%)
24.	Patients with COVID-19 can experience nausea and vomiting.	120 (57.1%)
25.	Moderately severe symptoms of COVID-19 include mild pneumonia and dyspnoea.	188 (89.5%)
26.	Severe symptoms of COVID-19 include Acute Respiratory Syndrome Disorders, respiratory failure, and multiple organ failure.	192 (91.4%)
27.	Physiotherapy is recommended in the management of in-patients with COVID-19.	195 (92.9%)
28.	Acute phase physiotherapy management excludes breathing exercises, bronchial hygiene, incentive spirometry, and manual mobilisation techniques.	19 (9.0%)
29.	Sub-acute physiotherapy management includes Active cycle of breathing technique (ACBT), exercises and manual techniques.	182 (86.7%)
30.	Early mobilisation of patients is essential for quick recovery in COVID-19 patients.	175 (83.3%)

Table 5 shows the respondents' willingness to care for COVID-19 patients: 77.1% were willing to provide care for a patient who tested positive for COVID-19; 92.9% were willing to provide virtual physiotherapy management; and 74.8% were willing to be part of a frontline care team in the management of COVID-19 during the pandemic. A chi-square analysis revealed a significant association between the respondents' level of knowledge about COVID-19 and educational qualifications (p = 0.00) (Table 6). Comparatively, physiotherapists with higher educational qualifications had significantly (p < 0.05) lower poor knowledge and higher good knowledge of COVID-19 than those with lower educational qualifications (Table 6).

Table 4. Respondents' attitude to COVID-19

No.	Item	Always n (%)	Sometimes n (%)	Few times n (%)	Rarely n (%)	Never n (%)
1.	I wash my hands with soap and water because of COVID-19.	162 (77.1%)	39 (18.6%)	7 (3.3%)	-	2 (1.0%)
2.	I use an alcohol-based hand sanitizer in the absence of soap and water because of COVID-19.	158 (75.2%)	37 (17.6%)	11 (5.2%)	2 (1.0%)	2 (1.0%)
3.	I disinfect surfaces with alcohol-based disinfectants because of COVID-19.	75 (35.7%)	75 (35.7%)	25 (11.9%)	23 (11.0%)	12 (5.7%)
4.	COVID-19 should not hinder us from showing love by giving handshakes and hugs.	32 (15.2%)	9 (4.3%)	11 (5.2%)	27 (12.9%)	131 (62.4%)
5.	Maintaining at least a 2 metre distance from patients and other people is a priority for me because of COVID-19.	125 (59.5%)	45 (21.4%)	17 (8.1%)	16 (7.6%)	7 (3.3%)
6.	I would perform my professional functions without personal protective equipment.	13 (6.2%)	8 (3.8%)	8 (3.8%)	17 (8.1%)	164 (78.1%)
7.	I would reduce exits from a patient's cubicle while managing him/her.	97 (46.2%)	42 (20.0%)	32 (15.2%)	18 (8.6%)	21 (10.0%)
8.	I would dispose of all disposable PPE while leaving a patient's cubicle.	167 (79.5%)	19 (9.0%)	7 (3.3%)	5 (3.3%)	12 (5.7%)
9.	I would clean and decontaminate mobilisation and exercise equipment after a single use by a patient.	160 (76.2%)	25 (11.9%)	11 (5.2%)	4 (1.9%)	10 (4.8%)

Table 5. Respondents' willingness to care for COVID-19 patients

No.	Item	Positive Answers n (%)
1.	I am willing to be tested for COVID-19.	188 (89.5%)
2.	I am willing to accept giving an approved vaccine that could prevent COVID-19 to my children.	164 (78.1%)
3.	I am willing to accept an experimental treatment for COVID-19, even when not tried yet on humans.	19 (9.0%)
4.	I am willing to provide care for a patient who tested positive for COVID -19.	162 (77.1%)
5.	I am willing to be part of a COVID-19 front-line care team.	157 (74.8%)
6.	I am willing to provide care for a patient who has now tested negative after a previous positive test.	183 (87.1%)
7.	I am willing to provide virtual physiotherapy services for any patient during the COVID-19 pandemic.	195 (92.9%)

Table 6. Chi-square test of association between respondents' knowledge about COVID-19 and demographic characteristics

	Poor n (%)	Average n (%)	Good n (%)	X^2	p-value
Age					
under 30	57 (55%)	31 (66%)	37 (62%)		
31-40	28 (27%)	11 (23%)	11 (18%)		
41-50	11 (11%)	2 (4%)	6 (10%)	4.12	0.7
51 & older	7 (7%)	3 (6%)	6 (10%)		
Sex					
male	67 (65%)	33 (70%)	36 (60%)	1.21	0.6
female	36 (35%)	14 (30%)	24 (40%)		
Marital Status					
single	56 (54.9%)	30 (63.8%)	38 (64.4%)	2.63	0.6
married	46 (45.1%)	17 (36.2%)	21 (35.6%)		
Highest Educational Qualification					
BSc/BMR/BPT	60 (58%)	37 (78.7%)	43 (71.7%)		
MSc	38 (37%)	5 (10.6%)	10 (16.7%)	16.26	0.00**
PhD	5 (5%)	5 (10.6%)	7 (11.7%)		
Years of Experience					
1-5	59 (56.3%)	32 (68.1%)	40 (66.7%)		
6-10	19 (18.4%)	8 (17.0%)	6 (10.0%)		
11-15	7 (6.8%)	4 (8.5%)	5 (8.3%)		
16-20	7 (6.8%)	0 (0.0%)	1 (1.7%)	11.85	0.5
21-25	7 (6.8%)	1 (2.1%)	3 (5.0%)		
26-30	2 (1.9%)	2 (4.3%)	3 (5.0%)		
more than 30	2 (1.9%)	0 (0.0%)	2 (3.3%)		
Place of work					
state hospital	12 (11.7%)	7 (14.9%)	12 (20.0%)		
teaching hospital	38 (36.9%)	17 (36.2%)	21 (35.0%)		
FMC	5 (4.9%)	6 (12.8%)	2 (3.3%)	8.34	0.6
university	13 (12.6%)	7 (14.9%)	8 (13.3%)		
private practice	30 (29.1%)	8 (17.0%)	14 (23.3%)		
specialist	5 (4.9%)	2 (4.3%)	3 (5.0%)		
Present status in physiotherapy					
Recent graduate	9 (8.7%)	8 (17.0%)	6 (10.0%)		
Intern	16 (15.5%)	12 (25.5%)	7 (11.7%)		
Lecturer (I & II)	7 (6.8%)	4 (8.5%)	2 (3.3%)		
Senior Lecturer	0 (0.0%)	0 (0.0%)	2 (3.3%)		
Professional cadre	2 (1.9%)	1 (2.1%)	2 (3.4%)		
Director	4 (3.9%)	0 (0.0%)	0 (0.0%)	22.47	0.3
Directorate member (Asst. & Dep.)	10 (9.7%)	3 (6.4%)	5 (8.3%)		
Chief physiotherapist	4 (3.9%)	0 (0.0%)	2 (3.3%)		
Principal physiotherapist	6 (5.8%)	4 (8.5%)	4 (6.7%)		
Senior physiotherapist	11 (10.7%)	2 (4.3%)	4 (6.7%)		
Physiotherapist	34 (33.0%)	13 (27.7%)	26 (43.3%)		
Area of specialization					
Neurology	20 (19.4%)	10 (21.3%)	7 (11.7%)		
Women's health	2 (1.9%)	0 (0.0%)	1 (1.7%)		
Paediatrics	9 (8.7%)	5 (10.6%)	6 (10.0%)		
Orthopaedics	36 (35.0%)	11 (23.4%)	16 (26.7%)		
Geriatrics	7 (6.8%)	1 (2.1%)	2 (3.3%)	14.32	0.7
Community Physiotherapy	4 (3.9%)	2 (4.3%)	4 (6.7%)		
Obstetrics & Gynaecology	0 (0.0%)	2 (4.3%)	1 (1.7%)		
Cardiopulmonary	5 (4.9%)	3 (6.4%)	4 (6.7%)		
General practice	17 (16.5%)	12 (25.5%)	17 (28.3%)		
Ergonomics/Sport	3 (2.9%)	1 (2.1%)	2 (3.3%)		

Notes: ** - statistically significant at p < 0.05.

Discussion

This survey-based study assessed the knowledge, attitude, and willingness of Nigerian physiotherapists to care for patients with COVID-19. The study findings revealed that about one-third of surveyed physiotherapists had sufficient knowledge about COVID-19, while about one-fourth had average knowledge of COVID-19.

These findings are consistent with reports from previous studies regarding the levels of knowledge of COVID-19 among physiotherapists in Nigeria [18, 19]. However, the percentage score of physiotherapists' knowledge in this study was lower compared to earlier research results. One major reason for this low percentage was that the present study had been conducted earlier (March to July 2020) than the other studies (from July 2020 to June 2021). Given that world scientists and professionals were busy working around the clock to unravel the clinical profile of COVID-19 at the onset of the pandemic, the physiotherapists' knowledge score in this survey is commendable.

Other factors responsible for the differences between physiotherapists' knowledge scores in this study and in the previous studies were higher incidences of COVID-19 cases in other populations compared to the study population in the present study, the association of sufficient knowledge about COVID-19 with physiotherapists' educational qualifications in this study, and exposure to information from the government and media about COVID-19 since the start of the outbreak [20, 21]. Unlike in many European and North American countries, the first indexed case of COVID-19 in Nigeria was an Italian citizen who travelled in through the Murtala Muhammed International Airport on 25 February, 2020 from Milan [22]. Prior to that time there were speculations that COVID-19 had not spread to Nigeria and other sub-Saharan countries as it was thought to be allegedly incapable of thriving in regions with a warm or hot climate [23]. However, before the first recorded case the Nigerian government had set up a coronavirus preparedness group to put in place measures to control the spread and its impact in the case of an outbreak in the country [24]. This government action came on the heels of the WHO listing Nigeria one of thirteen African countries identified as high-risk areas for the spread of the virus [25, 26]. Summarily, given that COVID-19 was an evolving disease, it is adducible that the relative lower rates in the sufficient knowledge among the respondents in this study may be linked to the varied access to the new information on COVID-19 from time to time.

Almost one-half of the physiotherapists taking part in the study had only sufficient knowledge about COVID-19, despite being members of various healthcare teams. This finding signals the poorer knowledge of the disease in the Nigerian general population in Nigeria. The present study found that the level of knowledge about COVID-19 was significantly associated with respondents' educational qualifications. Comparatively, physiotherapists with higher educational qualifications had significantly lower poor knowledge and higher good knowledge of COVID-19 than those with lower educational qualifications. In line with this finding, Zhong et al. [20] reported a considerably positive correlation between the level of education and knowledge regarding COVID-19.

There are several reasons for the observed differences in the level of knowledge between physiotherapists with higher educational qualifications and those with lower educational qualifications. Erfani et al. [21] believe that educated individuals would likely actively seek information from reliable sources about the pandemic in the face of overwhelming news reports. Also the differences in knowledge levels between physiotherapists with regard to their educational qualifications may be attributed to functional health literacy related to one's ability to read and comprehend information and instructions in a health setting [27]. Functional health literacy is linked to educational attainment and general literacy [27, 28]. One previous study found that people with inadequate literacy and numeracy skills will have less exposure to universal health information, and their skills needed to comprehend and act upon health information will be less developed [28]. Hence,

physiotherapists with higher educational qualifications are expected to have good knowledge of disease outbreaks, such as the COVID-19 pandemic, than the physiotherapists with lower educational qualifications. This is because they have more access to universal health information, and usually serve in national and global health agencies providing verified first-hand information.

The study results show that social media, especially the WhatsApp instant messaging platform, was the main medium of information about COVID-19 for the physiotherapists. This confirms the recent reports that social media, especially WhatsApp, is the top source of COVID-19 information in South Africa, Kenya, and Nigeria [26]. However, the reports also acknowledged that users of social channels such as WhatsApp do spread false information and posts about COVID-19 and possible remedies. The consequences of COVID-19 crisis, lockdowns, and movement restrictions imposed by many national governments seem to have led to an increase in the use of social media as a means for people to stay connected and updated. WhatsApp is a social media app that has experienced the greatest gains in usage due to COVID-19 [29]. In recognition of the foregoing, the WHO [30] has adopted WhatsApp as a platform to bring COVID-19 facts to billions of people. The present study revealed that a good number of physiotherapists considered the WHO to be the most reliable source of information about COVID-19.

In the present study the level of knowledge about personal hygiene with respect to regular washing of hands with soap and water in order to reduce the risk of infection, compulsory use of PPE, 'social distancing' by avoiding shaking of hands or other physical contacts with an infected person, severe symptoms of COVID-19 (acute respiratory syndrome disorders, respiratory and multiple organ failure), and quarantining a person who had been in contact with a patient with COVID-19 for two weeks, was the highest among the responding physiotherapists. The foregoing shows that most respondents had adequate knowledge of some of the key recommendations for actions for COVID-19

prevention and control [31]. Although the majority of the respondents affirmed that COVID-19 was an airborne disease, there is no evidence or consensus on the airborne transmission of COVID-19 in emerging reports [32-34], and a WHO-sponsored analysis of 75,000 Chinese cases concluded zero airborne transmission of the disease [35].

Respondents in this study asserted that physiotherapy is recommended in the management of COVID-19 in-patients in tandem with conclusions from the World Confederation for Physical Therapy, American Physical Therapy Association and the Chartered Society for Physiotherapy, all of which have been championing campaigns on the role of physiotherapy in patient care and practice management guidelines for COVID-19 [36-38]. According to Thomas et al. [39] physiotherapists have an important role to play in the management of patients with COVID-19, especially those admitted to acute hospital wards and intensive care units. The present study attempted to assess the physiotherapists' knowledge of their role in COVID-19 management. The majority of respondents asserted that physiotherapy was important in the sub-acute phase of management of COVID-19 in terms of active cycle of breathing techniques, exercises, and manual techniques.

Most respondents added that early mobilisation of patients is essential for quick recovery from COVID-19. Thomas et al. [39] posits that physiotherapy may be helpful in the respiratory care and other physical functioning of patients with COVID-19. Specifically, they indicate that physiotherapy may be beneficial for patients with COVID-19 experiencing copious airway secretions, who require assistance with airway clearance, patients with hypersecretion or ineffective cough as a result of existing comorbidities, and patients with inadequate airway clearance or other forms of cardio-respiratory deconditioning.

Furthermore, McEachan et al. [40] observed that knowledge was a precondition for forming positive attitudes and behaviours towards disease. In this study the respondents demonstrated positive attitudes in line with recommendations for actions for COVID-19 prevention and control [31]. More specifically,

most of the physiotherapists practice hand washing using soap and water because of COVID-19 and use alcohol-based hand sanitizers in the absence of soap and water. However, maintaining at least a 2 metre distance from patients and other people because of COVID-19 was a lower practice priority for the respondents, most likely due to the necessary proximity to patients during physiotherapy sessions. General population studies from China [20] revealed optimistic attitudes and maintenance of appropriate practices towards COVID-19. With respect to practice, the respondents in this study would dispose of all disposable PPE while leaving a patient's cubicle, as well as decontaminate mobilisation and exercise equipment after use by each patient. There has been now a plethora of studies whose specific findings can be effectively compared with those in the present study.

The physiotherapists in this study were very willing to provide care for COVID-19 patients. This is the first study that has explored physiotherapists' willingness to care for patients with COVID-19. Shapira et al. [41] noted that the willingness of healthcare workers to respond is an important factor of a health system's response capacity during emergencies. Aoyagi et al. [42] found that confidence in safety measures, professional skills, and training background are important determinants of the willingness of medical staff to get actively involved in anti-epidemic duties in the event of an outbreak. Caring for patients with COVID-19 is difficult, entails a huge risk, and compromises the health and safety of providers [43, 44].

This study provides empirical information on physiotherapists' preliminary levels of knowledge of and attitude to COVID-19 and willingness to provide care to COVID-19 patients at the onset of the COVID-19 pandemic. Healthcare decision makers, professional bodies, and employers should implement appropriate training programmes to improve the knowledge about COVID-19. Also, guidelines and recommendations on preventive and protective measures for physiotherapists working in the frontline of COVID-19 management should be provided. These strategies may help patients with COVID-19 to enhance their access to rehabilitation services and thus their health outcomes.

A potential limitation of this study is that physiotherapists who were not registered on WhatsApp may have been inadvertently left out of the survey. Future studies should explore broader social media platforms such as Telegram and Twitter to compare the levels of knowledge of COVID-19 between health professionals

Conclusion

Nigerian physiotherapists had an appreciable level of knowledge of COVID-19 at the onset of the pandemic. Physiotherapists with higher educational qualifications had significantly lower poor knowledge and higher good knowledge of COVID-19 than those with lower educational qualifications. Also the surveyed physiotherapists were willing to provide care for COVID-19 patients and survivors as well as to be part of COVID-19 front-line care teams.

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