



## ASSESSMENT OF NIGERIAN PHYSIOTHERAPY STUDENTS' KNOWLEDGE, ATTITUDES AND AWARENESS OF PHYSIOTHERAPY ROLES IN THE PREVENTION AND MANAGEMENT OF COVID-19: A NATIONWIDE ONLINE SURVEY

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### **Abstract**

*This cross-sectional study assessed Nigerian Physiotherapy students' knowledge, attitudes and awareness of the roles of physiotherapy in the prevention and management of COVID-19. Four hundred (400) Nigerian physiotherapy students responded to the survey via an electronic (WhatsApp) questionnaire. The survey revealed a high degree of COVID-19 awareness (98.3%) with the social media (83.3%), especially WhatsApp (70.8%), indicated as the main source of information. 52% of the respondents exhibited a good level of knowledge of the virus, as well as anti-COVID-19 precautions and hygiene. The level of knowledge correlated with the participants' ages; the final year (class v) had the highest knowledge score (40). While Nigerian physiotherapy students demonstrate a high level of awareness with regard to the virus and its transmission, the level of knowledge relating to physiotherapy roles in COVID-19 appears to be low.*

**Key words:** COVID-19, physiotherapy students, physiotherapy roles, social media, Nigeria

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### **Introduction**

For the sixth time in history, on January 30th 2020, the World Health Organisation (WHO) declared Corona Virus Disease – 2019 (COVID-19), caused by the Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2), a public health emergency of international concern [1] after the United States of America reported their first person-to-person transmission of the SARS-CoV-2 disease. Officially named COVID-19 on 11th February 2020, and its pathogen named SARS-CoV-2, the

disease is marked by fever, fatigue and dry cough while some patients present with runny nose, sore throat or diarrhoea, nasal congestion, body aches and pains [2-5]. As of July 30, 2020, COVID-19 is confirmed to have affected 17 million individuals worldwide and has resulted in more than 667,000 deaths with confirmed cases in all continents except Antarctica [6]. Older adults as well as persons with underlying morbidities like hypertension, diabetes or

cardiac pathology are at higher risk of developing serious symptoms like difficulty in breathing and in extreme cases, the disease may end in mortality [7].

Nigeria became the first Sub-Saharan African country to report a case of SARS-CoV-2 on 27th February, 2020. The number of infected persons and deaths in the country as of August 3, 2020 stand at 44,129 and 896 [8]. The WHO global risk assessment of the disease situation remains 'Very High', the highest ever reported by the organisation [1, 6]. Global and local awareness has commenced answering frequently asked questions as well as busting myths about prevention practices and the treatment of the disease. An initial desk review shows an apparent dearth of studies on knowledge, attitude and practice of medical students, who are potential and future health care providers, towards COVID-19 at global and local levels. Physiotherapy plays a significant role in traditional acute respiratory care and other co-opted frontline roles in the prevention and rehabilitative phase of management of patients with COVID-19. Hence, the aim of this study was to assess the knowledge, attitudes and awareness of physiotherapy roles in the management and prevention of COVID-19 among Nigerian physiotherapy students.

## Methods

A nationwide online cross-sectional survey using the WhatsApp platform was conducted in Nigeria. Students' association WhatsApp platforms of Bayero University, Bowen University, Nnamdi Azikiwe University, Obafemi Awolowo University, the University of Benin, the University of Ibadan, the University of Lagos, the University of Maiduguri, and the University of Medical Sciences were used for this study. Based on the WhatsApp Surveying Guide by the United Nations the spread and representativeness of the study population was improved by first identifying and recruiting WhatsApp platform administrators in students' associations as focal persons. Students from levels 3 to 5 (clinical

levels) were the respondents in this study. There are 5 levels of physiotherapy courses at Nigerian universities. The focal persons assisted with the broadcast and periodic re-broadcast of the survey links to the group. Sample size calculation based on Cochran's sample size formula [9] indicated that 384 participants were required for the survey. However, a total of 400 physiotherapy students responded in this survey.

An instrument used in a similar study on knowledge, attitudes, and physiotherapy roles in prevention and care of COVID-19 by Ojo et al. [10] was adapted in this study. The face and content validity of the questionnaire was tested among experts in physiotherapy. 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 explained to the respondents, with a click on the survey link indicating consent. Volunteers were informed of their right to withdraw from the study at will. Completed questionnaires were submitted via online links; an incomplete survey could not be submitted. A WhatsApp survey was programmed to avoid cases of multiple responses from the same individual or contact. Anonymity of the respondents was ensured.

### *Data analysis*

The data were summarized using descriptive statistics of the mean, the standard deviation, and percentages. A chi-square analysis was used to test associations between dependent and independent variables in the study. The analysis was performed using the Statistical Package for Social Sciences (IBM SPSS 22). The alpha level was set at  $p \leq 0.05$ .

## Results

Table 1 shows the socio-demographic characteristics of the respondents, who were mostly female (56.4%), between the ages of 21 and 30 years (66.8%), and were in Level III (43.9%).

**Table 1.** Socio-demographic profile of the respondents ( $n = 400$ )

Variable	Frequency	Percentage
<b>Age</b>		
<21	267	66.8
21-30	131	32.7
31 and older	2	0.5
<b>Sex</b>		
Male	175	43.6
Female	225	56.4
<b>Class</b>		
Year 3	176	43.9
Year 4	95	23.7
Year 5	129	32.4

**Table 2.** Awareness of COVID-19 among respondents ( $n = 400$ )

S/N	Question	Yes (%)
1.	Have you ever heard of Corona Virus?	98.3
2.	Do you believe COVID-19 exists in Nigeria?	97.5
3.	What do you think caused Covid-19	
	Virus	95.8
	Bats	22.9
	Monkeys and other wild animals	7.7
	God/ higher power	2.7
	Witchcraft	0.5
	Evil doing/sin	5.0
4.	Do you know the phone number to call to report a suspected COVID-19 case or ask questions about COVID-19?	70.1
5.	Means of receiving information?	
	Social Media	83.3
	News Media	78.8
	Church/Mosque/Community Meeting	16.4
	Mega-phone/Public announcement	3.2
	Professional Seminars	6.0
6.	Most reliable source of information about COVID-19?	
	WHO	50.4
	NCDC	30.9
	Health/Medical Professionals	9.0
	News Media	4.7
	Social Media	4.0
	Religious leaders	0.7
	Traditional leaders	0.7
7.	Type of Social Media?	
	WhatsApp	70.8
	Facebook	31.3
	YouTube	14.8
	Twitter	58.4
	Instagram	34.0
	Yahoo	3.0
	LinkedIn	2.7
	Telegram, Opera news, Google and Reddit	0.3
8.	Type of News Media	
	Radio/TV	57.8
	News Websites	18.7
	Smartphone News App	19.9
	Newspapers	1.8
	Newsletters	1.8

Table 2 highlights findings on the awareness of COVID-19 among the respondents. 98.3% of the respondents were aware of COVID-19 and that it was caused by a virus (97.5%). The WHO was regarded as the most reliable source of information about COVID-19 (50.4%). The social (83.3%) and the

news media (78.8%) were indicated as the main sources of information about COVID-19. 70.8% of social media information about COVID-19 was via WhatsApp. 70.1% of the respondents affirmed to know the phone number to call to report a suspected case of or inquire about COVID-19.

**Table 3.** Knowledge of COVID-19 among respondents (*n* = 400)

No	Item	Percentage of respondents who gave the correct answer n (%)
1.	COVID-19 is not an airborne disease	181 (45.3%)
2.	Staying at home is the best method of curbing the spread of COVID-19	320 (80.0%)
3.	Regular hand washing with soap and water will reduce the risk of infection	341 (85.3%)
4.	Coughing or sneezing into your elbow will reduce the spread of COVID-19	259 (64.8%)
5.	Using alcohol-based hand-rub will reduce the risk of infection of COVID-19	244 (61.0%)
6.	Steam inhalation of garlic and ginger solution, drinking hot lemon, gargling with warm water and salt cannot prevent COVID-19	194 (48.5%)
7.	Drinking alcohol and smoking cannot reduce the risk of contagion by COVID-19	348 (87.0%)
8.	Maintaining at least 1m from an infected person will reduce the spread of COVID-19	254 (63.5%)
9.	Summer weather does not reduce the transmission of COVID-19	200 (50.0%)
10.	Shaking of hands or other physical contact with an infected person increases the spread of COVID-19	293 (73.2%)
11.	Intake of antibiotics does not prevent or cure COVID-19	287 (71.8%)
12.	COVID-19 does not affect females more than males	302 (75.5%)
13.	Older adults are at more risk compared to the young population in contracting COVID-19	219 (54.8%)
14.	Close relations are more at risk of contracting COVID-19	247 (61.8%)
15.	It is possible to contact COVID-19 from a person who is infected but does not have any sign and symptoms	343 (85.8%)
16.	A person who has been in direct contact with COVID-19 must be quarantined for 2 weeks	191 (91.0%)
17.	COVID-19 is currently incurable	62 (29.5%)
18.	A suspected person reduces the chances of the spread of COVID-19 by immediately going to hospital	332 (85.8%)
19.	A suspected person with COVID-19 has higher chances of surviving if he/she goes immediately to a health facility	332 (85.8%)
20.	A person that has been diagnosed with COVID-19 should be admitted in an isolation centre	316 (79.0%)
21.	Chloroquine is an approved drug in treating COVID-19	223 (55.8%)
22.	Medical personnel must wear PPE before attending to a patient with COVID-19	342 (85.5%)
23.	Mild symptoms of COVID-19 include fever, malaise, productive or non-productive cough, and joint pain	289 (72.3%)
24.	Patients with COVID-19 can experience nausea and vomiting	187 (46.7%)
25.	Moderately severe symptoms of COVID-19 include mild pneumonia, dyspnoea.	295 (73.8%)
26.	Severe symptoms of COVID-19 include Acute Respiratory Disorders Syndrome, respiratory failure, and multiple organ failures	323 (80.8%)
27.	Physiotherapy is indicated in the management of in-patients with COVID-19	306 (76.5%)
28.	Acute phase physiotherapy management excludes breathing exercises, bronchial hygiene, incentive spirometry, manual mobilisation techniques	299 (74.8%)
29.	Sub-acute physiotherapy management includes Active cycle of breathing technique (ACBT), exercises and manual techniques	282 (70.5%)
30.	Early mobilisation of patients is essential to quick recovery persons with COVID-19	290 (72.5%)

Table 3 shows knowledge of the respondents about COVID-19. 45.3% of the respondents correctly responded that COVID-19 was not an airborne disease; and that it currently has no cure (57.5%). However, 55.8% of the respondents believed that Chloroquine is currently an approved drug for the treatment of the disease. 74.8% of the respondents assume that physiotherapy techniques such as

breathing exercises and incentive spirometry were not indicated in the acute phase management of severe COVID-19. 72.5% of the respondents confirmed that they knew that early mobilisation of patients was essential for quick recovery from COVID-19. Based on the knowledge summation score, only 22.5% of the respondents seemed to have sufficient knowledge of COVID-19.

**Table 4.** Distribution of Knowledge of COVID-19 among respondents ( $n = 400$ )

Level	Frequency	Percent
Poor	192	48.0
Average	118	29.5
Good	90	22.5

**Table 5.** Attitudes related to COVID-19 ( $n = 400$ )

No	Item	Every time $n$ (%)	Sometimes $n$ (%)	Few times $n$ (%)	Rarely $n$ (%)	Never $n$ (%)
1.	I wash my hands with soap and water because of COVID-19	196 (49.0%)	171 (42.75%)	27 (6.75%)	5 (1.25%)	1 (0.25%)
2.	I use alcohol-based hand sanitizer in the absence of soap and water because of COVID-19	160 (40.0%)	164 (41.0%)	38 (9.5%)	20 (5.0%)	18(4.5%)
3.	I disinfect surfaces with alcohol-based disinfectants because of COVID-19	76 (19.0%)	131 (32.75%)	75 (18.75%)	67 (16.75%)	51 (12.75%)
4.	COVID-19 should not hinder us from showing affection with handshakes and hugging	61(15.25%)	43 (10.755%)	69 (17.25%)	52 (13.0%)	175 (43.75%)
5.	Maintaining a distance of at least 2m from patients and other people is a priority for me because of COVID-19	232 (58.0%)	105 (26.25%)	28 (7.0%)	27 (6.75%)	8 (2.0%)

**Table 6.** Chi-square Test of Association between Knowledge about COVID-19 and Demographic Characteristics ( $n = 400$ )

Variable	Poor	Average	Good	X <sup>2</sup>	$p$ -value
<b>Age</b>				4.895	0.298
>30	2 (0.5)	0 (0)	0 (0)		
21-30	121 (30.25)	81 (20.25)	66 (16.5)		
Less than 21	69 (17.25)	37 (9.25)	24(6)		
<b>Sex</b>				0.210	0.900
Male	84 (21)	50 (12.5)	41 (10.25)		
Female	108 (27)	68 (17)	49 (12.25)		
<b>Level</b>				11.519	0.021*
Part III	97 (24.25)	46 (11.5)	33 (8.25)		
Part IV	44 (11)	33 (8.25)	17 (4.25)		
Part V	51 (12.75)	39 (9.75)	40 (10)		

\* $p < 0.05$

Table 5 reveals findings on respondents' attitudes towards COVID-19. 98.5% of the respondents declared they would wash their hands with soap and water, 90.5%

would use alcohol-based hand rub (sanitizer) in the absence of soap and water because of the disease 70.5% would disinfect surfaces with alcohol based sanitizers, 57.0% would not greet anyone with a handshake; and 84.0% would

maintain a distance of at least 2 metres from other people. A chi-square analysis showed a significant correlation between the level of knowledge about COVID-19 and the level of training ( $p = 0.021$ ).

## Discussion

This study assessed the Nigerian physiotherapy students' knowledge, attitudes and awareness of physiotherapy roles in the management and prevention of COVID-19. In the current wake of COVID-19, there is an upsurge of information trending in the social media that may directly or indirectly influence students' knowledge, attitudes and awareness of care for patients with COVID-19. Since information on COVID-19 in the general public is conflicting [11], there is a need for the assessment of the knowledge and behaviour of the public, including physiotherapy students, with regard to the pandemic. This will help raise the awareness of the best practices in dealing with the disease as similar assessments have proved useful in SARS, MERS, and Ebola viral outbreaks [12, 13]. Nigeria, with more than 10,000 physiotherapy students in about 15 physiotherapy schools, may have several of these students partaking in volunteer service on COVID-19 in various locations and local hospitals across the country ever since universities were closed in March 2020 because of the pandemic. Besides, the healthcare system and healthcare professionals are stretched during pandemics like COVID-19 [14], which increases the likelihood of the participation of healthcare students, including physiotherapy students, in medical treatments, thereby exposing them to risk of contracting and also transmitting the virus, especially without requisite knowledge. Also, family and friends may seek health care advice on COVID-19 from these students. Therefore, the assessment of their levels of knowledge, attitudes, and care for COVID-19 patients is imperative.

A total of 98.3% of the students were aware of COVID-19 and that it was caused by a virus (97.5%). The WHO was regarded as the most reliable source of information about COVID-19 (50.4%). This impressive level of awareness on COVID-19 by the Nigerian physiotherapy students is similar to the results

obtained by the Jordanian [14] and Indian [15] medical students on their knowledge of the pandemic. The high level of knowledge about the virus obtained in this study is not surprising as the participants were undergraduates expected to be aware of ongoing risks in their environment due to the specificity of their field of study which comprises public health education. This is further supported in our study by a high positive correlation between the level of training and the awareness of COVID-19 in the sample. Education is reported to be highly correlated with knowledge of health matters [16], and studies have shown that educated individuals, the elderly, women, and high income earners exhibit more awareness of novel communicable public health diseases [17]. The students surveyed were mainly dependent on their parents for income. Also, the Nigerian government, through the Ministry of Information and Culture and Presidential Task Force on COVID-19, have greatly intensified their efforts to raise public awareness of the facts and preventive measures against the disease through television, news and other media platforms. These sources of information, available in all major languages spoken in Nigeria, will definitely reach the public, including the students in question, and raise their knowledge of the pandemic.

The social media (83.3%) and the news media (78.8%) were the main sources of information about COVID-19. 70.8% of social media information about COVID-19 was obtained through WhatsApp. 70.1% of the students affirmed to know the phone number to call to report a suspected case of or ask questions about COVID-19. The data obtained in this study concerning the sources of information on COVID-19 is similar to the findings by Khasawneh et al. [14] among Jordanian medical students who also relied heavily on online sources for information on the pandemic. The majority of the students in this study received information on the virus via the WhatsApp application. Recently, WhatsApp has been reported to have a role to play in healthcare services, including health-related information dissemination, in developing nations or low and middle income countries due to the peculiar characteristics of this

application [18, 19]. A total of 45.3% of the students correctly responded that COVID-19 was not an airborne disease and that it currently has no cure (57.5%). However, 55.8% of them believed that Chloroquine is currently an approved drug for the treatment of the disease. The students' lack of knowledge about the approved drug or treatment regime for covid-19 comes as no surprise. Due to the lack of an adequate treatment for the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections, clinicians keep focusing on the drugs initially known to be effective against other infections or viruses in the treatment of COVID-19. Few of the drugs re-mobilized in the fight against COVID-19 are chloroquine or hydroxychloroquine, an antimalarial drug, which has been used before to treat a number of autoimmune diseases [20, 21]. Other classes of medications, including second-generation macrolide have also been tried in the management of COVID-19 [22], sometimes in combination with chloroquine. Some countries, like Madagascar, have resorted to the use of herbal remedies.

The majority of the students surveyed (74.8%) submitted that physiotherapy techniques such as breathing exercises and incentive spirometry were not included in the acute phase management of severe COVID-19 while 72.5% confirmed that they knew that early mobilisation of patients was essential for quick recovery from COVID-19. This would suggest that the recently introduced guideline on physiotherapy management of COVID-19 patients [5] has not been picked by these students. COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and was first isolated from bronchoalveolar lavage fluid of the sufferers (23). The symptoms of COVID-19 differ in each individual because the virus affects people differently [2] leading to no, mild or moderate symptoms exhibited by patients with the virus [24, 25]. Generally, common symptoms experienced by patients with COVID-19 include fever, non-productive cough, dyspnoea, fatigue, radiographic evidence of pneumonia, anxiety and depression. Other symptoms include nasal congestion, runny nose, sore throat, sneezing, myalgia as well as

gastrointestinal problems such as diarrhoea and vomiting [26, 2]. Some of these may lead to acute respiratory distress, reduction in lung compliance, increased respiratory effort, hypoxemia and hyperventilation requiring the expertise of a physiotherapist [2]. Physiotherapy is recommended in the management of respiratory and physical dysfunctions associated with COVID-19 [5], for instance, chest physiotherapy has been recommended for patients with COVID-19 as it improves ventilation, relieves respiratory symptoms and reduces the mortality rate [3, 4, 2]. Also, physiotherapists prescribe physical activity and exercise which help to boost immunity, relieve stress, depression and functional return which are vital in the treatment of COVID-19 sufferers [5].

Based on the knowledge sum score, only 22.5% of the Nigerian physiotherapy students had sufficient knowledge of COVID-19, which could be accounted for by the fact that this virus is fairly recent and that the earlier information and facts about the disease have been disregarded. For instance, there were initial conflicting statements on the transmission route or the potency of the virus or the use of face masks. Again, the knowledge scores concerning the role of physiotherapy in COVID-19 management may reflect the students' inability to keep up with the rate of the current developments and changes in recommendations on the prevention and treatment of the virus as more is learnt about the nature and course of the disease [5].

As to precautionary measures, a total of 98.5% of the respondents claimed to wash their hands with soap and water and 90.5% would use alcohol-based hand rub sanitizers in the absence of soap and water. 70.5% of the students would disinfect surfaces with alcohol based sanitizers, 57.0% would not greet with a handshake; and 84.0% would maintain at least a 2-metre distance from other people. The positive attitudes shown by the respondents in this study were similar to those recorded in several other recent studies conducted on samples of Jordanian medical students [14], Indian medical students [15], and Chinese general public [17]. The Nigerian government imposed some precautionary measures to

prevent the spread of COVID-19 including lockdown, relevant legislations, suspension of domestic and international flights, closure of schools, national curfew, and restrictions and regulations of social and religious activities coupled with intense media campaigns. These efforts may be responsible for the good attitudes displayed by the respondents. Educating the public on precautionary behaviour towards infectious disease has proved to be effective in shaping responsible attitudes [27]. Instruction on positive precautionary attitudes as part of the general physiotherapy course seems to have been successful in this respect too.

Several factors are responsible to shaping good attitudes and avoiding risk-taking behaviour. Knowledge and awareness of COVID-19 has been linked with responsible attitude towards the infection [17, 14, 15], and women generally are more likely to follow safe practice guidelines during pandemic than men [28, 29]. However, young age correlates negatively with safe health attitudes. While, youth and adolescents are known to be more prone to risky behaviour [30, 31], the good attitudes shown by the students in this study, despite their young age, may be explained by their increased awareness and knowledge of the disease and their line of training, i.e., physiotherapy.

To conclude, the Nigerian physiotherapy students in this sample displayed the expected awareness of COVID-19 with a relatively good knowledge of the disease and the role of physiotherapy in its management. They also showed desirable attitudes and precautionary measures toward the pandemic. The main source of information on COVID -19, as indicated by the respondents, were the social media, especially WhatsApp. This seems consistent with the results from parallel studies which confirm the role of the social media in gathering and dissemination of information on health among the youth and young adults. Governments, policy makers, health-care professionals, educators should therefore strategically consider public health information dissemination, health intervention, policies, and education for this age group, the digital natives, through the use of the social media. Students themselves should endeavour to keep abreast of any developments concerning the COVID-19 pandemic, and public health in general, with more emphasis on the roles expected of physiotherapy in the time of the pandemic, and to ensure proper attitudes and safe precautionary protocols. In interpreting the findings of this study, consideration must be given to the potential limitations of self-reported questionnaires, whose results can be affected by reporting bias.

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