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A cross-sectional study of knowledge of, attitude towards COVID-19 and prevalence of COVID-19 symptoms among undergraduate students of Niger Delta University, Bayelsa State, Nigeria

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Abstract

This study aimed to assess the levels of Knowledge, Attitude and Prevalence of COVID-19 symptoms among students of Niger Delta University in Bayelsa State of Nigeria. It was a descriptive cross-sectional study. Data was collected using convenience sampling among 350 participants drawn from the faculties of Pharmacy^[75], Nursing^[80], Management science^[150] and Arts^[45]. Data was collected with well-structure questionnaires that addressed the objectives of the study. All analyses were performed using SPSS version 23. Participation in this survey was anonymous, consensual and voluntary with informed consent given by all prospective respondents. Most respondents were within the age 18-25 years (63%); more males (55%); of the IJAW ethnic group (55%). All respondents had heard of Covid-19; 99% opined that Covid 19 is more prevalent in old individual; only 9% agreed that Covid-19 has a viral origin. Respondents identified the following as symptoms of Covid 19: Fever (100%), Cough (85%), Sore-throat (67%), Headache (43%). All respondents agreed that Covid-19 can be transmitted through touching the face, eyes, mouth; through contact with infected surfaces and through contact with individuals suspected to be infected. The majority of the respondents (85%) had a positive attitude towards Covid-19; all respondents opined that early detection of Covid-19 can improve treatment and outcome; that Covid-19 can be avoided by proper precautions (95%); if there is an available vaccine for the disease, it should be used (91%) and that health education can help prevent Covid-19 (71%). During the Peak, all respondents reportedly experienced unusual intense fatigue, muscle pain or stiffness; other experienced symptoms included shortness of breath (85%), loss of taste (84%), a runny nose or nasal congestion of unknown cause (77%), sudden loss of smell (77%), Diarrhea (77%), unusual headache (70%), sore throat (69%), fever (60%), flu-like chills (57%) and cough (41%) Overall, participants demonstrated a good knowledge of Covid-19 and most of the participants exhibited good attitudes towards Covid-19. The study was able to highlight gaps in specific aspects of knowledge and attitude of the students towards Covid-19 that should be focused on in future awareness and educational campaigns.

Keywords: COVID-19, knowledge, prevalence, undergraduates, Bayelsa, Nigeria

Introduction

COVID-19 pandemic dazzled the world bringing about unprecedented changes in way of life. These serious changes had to be affected in the educational sectors arising from prolonged periods of restricted movements and school closures. Coronavirus remains a public health concern. It was subsequently declared a health emergency and a global pandemic^[1-3] depicted to have caused close to 1.9 million deaths globally^[3]. Covid-19 is known to be transmitted from person to person through respiratory droplets^[4, 5]. Therefore, we need to assess their levels of knowledge and attitude towards the disease. To this end, this study aimed at assessing the knowledge of Covid-19 disease, symptoms, transmission, attitude towards the disease and the prevalence of Covid-19 symptoms among students of Niger Delta University, Wilberforce Island in Bayelsa State, Nigeria.

Methodology

A cross-sectional study was carried out among students of Niger Delta University (NDU) from the faculties of Pharmacy, Management sciences, nursing and Arts.

After calculating the sample size with online calculator, using a software by Qualtrics ^{XM} at Confidence Level of 95% and 5% margin of Error from a total of 1480 students during the 2020/21 academic session.

Structured questionnaires were developed and used for the collection of relevant data.

The reliability of the questionnaire was determined using the Cronbach alpha reliability test and a score of 0.825 was obtained.

The components of the knowledge section included their awareness, knowledge of the Origin of Covid-19, infectivity, aetiology; incubation period; treatment; people at risk, cause and modes of transmission, symptoms and individuals at risk of Covid-19. The Attitude section comprised 9 items and the Prevalence section contained 16 items which sought to identify the symptomatic experiences during the pandemic.

In a pilot study, the questionnaire was pretested on 20 participants from other faculties which were excluded afterward from the study. Expert review was done to modify the questionnaires appropriately.

Information collected was analyzed with aid of Statistical Package for Social Sciences (SPSS) version 23 for windows. Data generated were expressed in simple percentages in tabular format, while average values were presented in mean \pm standard deviation (SD).

Participation in this survey was anonymous, consensual and voluntary with informed consent given by all prospective respondents. Only students from the four identified faculties were included in the study.

Results

Demographic Data of Respondents

A total of 350 students completed the survey. Respondents were drawn from the faculties of Pharmacy [75, 21%], Nursing [80, 23%], Management science [150, 42%] and Arts [45, 13%]

Three departments were chosen from each faculty; the respondents comprised of 400 level students (36%), 300 level (21%), 100 level and 500 level (16%) respectively and 200 level (12%). The majority of the students were within the age 18-25 years (63%), 25-30 years (35%) and 30 years and above (2%). The study had more males (55%); most respondents were of the Ijaw ethnic group (55%), Igbo (21%), Yoruba (20%), Hausa (2%) and others (22%).

Knowledge of Covid-19 disease

All respondents expressed that they have heard of **Covid-19** and that the disease originated from China. They also affirmed that the disease is highly contagious with an incubation period of between 3 and 14 days. Most (99%) of the respondents agreed that the disease occurs commonly among old people. See Table 1.

Table 1: Knowledge of Covid-19

S/N	Knowledge of Covid-19	Frequently (N=350)	Percentage (100%)
1.	I have heard of Covid-19		
	Yes	350	100%
	No	-	-
2.	Covid-19 originated from		
	China	350	100%
	Europe	-	-
	Africa	-	-
3.	Covid-19 is contagious		
	Yes	350	100%
	No	-	-
	Don't know	-	-
4	Which can cause Covid-19		
	Bacteria	53	15%
	Fungi	263	75%
	Virus	30	9%
	Parasite	4	1%
5.	Incubation period of Covid-19		
	Less than 2 days	-	-
	2-5 days	-	-
	3-14 days	350	100%
	Don't know	-	-
6.	Treatment for Covid-19		
	Symptom therapy	165	48%
	Antibiotics	185	52%
	No treatment	-	-
7.	Age group where Covid-19 is more dangerous		
	up to 15 years	11	3%
	15-30 years	41	12%
	30-50 years	56	16%
	Above 50 years	242	69%
8.	More prevalent in old individual		
	Yes	345	99%
	No	5	1%

	Don't know	-	-
9.	More dangerous in people with weakened immune system		
	Yes	334	95%
	No	16	5%
	Don't know	-	-
10.	More dangerous in people with Cancer		
	Yes	321	92%
	No	29	8%
	Don't know	-	-
11.	More dangerous in pregnant women		
	Yes	248	71%
	No	90	26%
	Don't know	12	3%

Knowledge of Covid-19 Symptoms

Respondents identified the following as symptoms of COVID 19: Fever (100%), Cough (85%). Sore-throat

(67%), Headache (43%) and Diarrhea or constipation (3%).
Table 2.

Table 2: Knowledge of Covid-19 Symptoms

S/N	Signs/Symptoms of Covid-19	Agree (N=350)	Disagree (N=350)	Neutral (N=350)
1.	Fever is a symptom of Covid-19	350(100%)	-	-
2.	Cough is a symptom of Covid-19	291(85%)	1(1%)	50(14%)
3.	Sore throat is a symptom of Covid-19	235(67%)	15(4%)	100(29%)
4.	Body pain is a symptom of covid-19	-	50(14%)	300(86%)
5.	Diarrhea or constipation is a symptom of Covid-19.	9(3%)	21(6%)	300(91%)
6.	Headache is a symptom of Covid-19	150(43%)	2(1%)	198(56%)
	Mean (\bar{x})	174	15	161

Knowledge of Covid-19 Transmission

All respondents (100%) kissing (92%); Touching of mouth with the hands ((91%); Sharing of eating utensils like fork/knife/plates (90%), Consumption of contaminated diary

and meat (90%), Poor personal hygiene (86%), Coughing (85%), Sharing of towel (71%), Going out of the home (71%), Unnecessary vacations (70%), Going to work/Class (69%). See Table 3

Table 3: Knowledge of Covid-19 Transmission

S. No	Covid-19 can be transmitted	Agree N=350	Disagree N=350	Don't Know N=350
1.	through sharing of towel	248(71%)	102(29%)	-
2.	through household Pets to humans	10(3%)	340(71%)	-
3.	through touching my face unnecessarily	100(350%)	-	-
4.	through touching my eyes unnecessarily	350(100%)	-	-
5.	through touching my mouth unnecessarily	330(91%)	30(9%)	-
6.	through sharing eating utensils like fork/knife/plates	315(90%)	35(10%)	-
7.	through going out of my home unnecessarily	250(71%)	100(29%)	-
8.	through unnecessary vacations	246(70%)	104(30%)	-
9.	through handshaking	350(100%)	-	-
10.	Through kissing	322(92%)	28(8%)	-
11.	Through hugging	350(100%)	-	-
12.	Through going to work/Class	242(69%)	98(28%)	10(3%)
13.	Through public transportation (Taxis, buses).	184(52%)	160(46%)	6(2%)
14.	Through consuming outdoor food	58(17%)	290(82%)	2(1%)
15.	Through poor personal hygiene	302(86%)	48(14%)	-
16.	Through sneeze and cough	350(100%)	-	-
17.	Through contact with infected surfaces	350(100%)	-	-
18.	To avoid contacting Covid-19, I avoid contact with individuals suspected to be infected	350(100%)	-	-
19.	Washing of hands with soap and water can eliminate the disease cause	350(100%)	-	-
20.	The disease can be transmitted directly through cough	301(85%)	49(15%)	-
21.	The disease can be transmitted directly through the consumption of contaminated diary and meat.	314(90%)	36(10%)	-
	Mean (\bar{x})	1.284	2.65	3.1

Attitude towards Covid-19: All respondents depicted that early detection of Covid-19 can improve treatment and

outcome, that Covid-19 is a strong disease and that it is a curable disease.

Table 4: Attitude towards Covid-19

S/N	Attitude Towards Covid-19	Agree N=350	Disagree N=350	Neutral N=350
1.	Early detection of COVID-19 can improve treatment and outcome	350(100%)		
2.	Covid-19 can be treated at home	240(70%)	104(30%)	-
3.	Health education can help prevent Covid-19	248(71%)	62(18%)	40(12%)
4.	Covid-19 can be avoided by proper precautions	331(95%)	19(5%)	-
5.	Covid-19 is a strong disease	350(100%)	-	-
6.	If there is an available vaccine for the disease, it should be used	330(91%)	27(8%)	3(1%)
7.	Covid-19 is a curable disease	350(100%)	-	-
8.	The awareness about Covid-19 disease in the society is sufficient/satisfactory	311(89%)	2(1%)	37(10%)
9.	Covid-19 disease results in death in all cases	-	350(100%)	-
	Mean (\bar{x})	278	63	9

Prevalence of Covid-19 symptoms

During the Peak, all respondents experienced unusual intense fatigue and muscle pain or stiffness. Further, during the peak of the pandemic, respondents reported to have experienced trouble breathing or shortness of breath (85%),

loss of taste (84%), a runny nose or nasal congestion of unknown cause (77%), sudden loss of smell (77%), Diarrhea (77%), unusual headache (70%), sore throat (69%), significant loss of appetite (69%), feverish (63%).

Table 5: Prevalence of Covid-19 symptoms

S/N	Signs and Symptoms	During the Peak N=350	In the Last One Month N=350	In the Last Week N=350
1	Feverish	220(63%)	122(35%)	8(2%)
2	flu-like chills	198(57%)	37(11%)	115(31%)
3	Fever with an oral temperature of 38.1C or higher?	208(60%)	123(35%)	19(5%)
4	sudden loss of smell	270(77%)	72(21%)	8(2%)
5	nasal congestion (stuffy nose),	23(7%)	46(13%)	281(80%)
6	loss of taste	292(84%)	50(14%)	8(2%)
7	a cough or a chronic cough that gets worse	142(41%)	24(7%)	184(52%)
8	trouble breathing or shortness of breath	298(85%)	2(1%)	50(14%)
9	a runny nose or nasal congestion of unknown cause	269(77%)	28(8%)	53(15%)
10	sore throat	241(69%)	78(22%)	31(9%)
11	stomach ache	78(22%)	198(57%)	74(21%)
12	Diarrhea	269(77%)	81(23%)	-
13	unusual intense fatigue for no obvious reason	350(100%)	-	-
14	significant loss of appetite	241(69%)	63(18%)	46(13%)
15	unusual or unexplained muscle pain or stiffness (not related to physical activity)	350(100%)	-	-
16	unusual headache	246(70%)	36(10%)	68(20%)
	Mean (\bar{x})	230	61	58

Discussion

This study sought to determine the levels of Knowledge, Attitude and Prevalence of Covid-19 symptoms among 350 NDU Students drawn from the faculties of Pharmacy [75, 21%], Nursing [80, 23%], Management science [150, 42%] and Arts [45, 13%]. A majority of the students were aged 18-25 years (63%), males (55%); Most respondents were of the Ijaw ethnic group (55%). Most of them were in their 400 Level of study (36%).

Knowledge of Covid-19 disease

All respondents in this study expressed that they have heard of Covid-19 which is consistent with a similar study [6]. Participants in this study further revealed a good knowledge of COVID-19 pandemic. This is not a surprise considering that they were undergraduates. On the contrary, poorer knowledge levels were displayed from a in Pakistan (50.2%, [7] and Nigeria (59.5%, [8] and in a public medical center in Ethiopia (41.3%, [9]. All respondents had good knowledge of the origin of Covid-19, the highly contagious nature and the Incubation period which is in tandem with other studies [6, 10, 11, 12]. Nearly all respondents (99%) knew that the disease is more prevalent in old age (50 years and above) and 95%

knew that it is more dangerous in people with a weakened immune system.

Knowledge of Covid-19 Symptoms

The majority of the students demonstrated a good knowledge of Covid-19 symptoms like Fever (100%), Cough (85%), Sore-throat (67%), Headache (43%) which is consistent with reports from other studies [6, 12, 18]. Two earlier studies by Saqlain *et al*, 2020 [22] and Gao *et al*, 2020 [23] had reported good knowledge (93.2% and 89.51%) of participants regarding Covid-19 transmission and symptoms. A lower knowledge (56.5%) of Covid-19 symptoms was however revealed among the Iranian population [24].

Literature reveals that, similar to other viruses of the Corona viridae family, the core clinical presentations of Covid-19 are fever (which occurs in nearly all affected persons), dry cough, dyspnoea along with bilateral patchy infiltration on imaging [25, 26]. Reports from WHO revealed that Covid-19 may result in mild to severe respiratory distress, depending on the individuals' age, immune system and the presence of any other underlying chronic conditions. WHO claimed that approximately 80% of patients infected with COVID-19

showed mild symptoms or were asymptomatic, and eventually recovered without any medical intervention, whereas 15% of infected persons presented with severe illness, including shortness of breath, septic shock and multiple-organ failure, and remaining 5% of cases categorized as fatal requiring specialized care [27].

Knowledge of Covid-19 Transmission

All respondents (100%) agreed that Covid-19 can be transmitted through touching the face and eyes unnecessarily, through handshaking, through hugging, through sneezing and coughing, through contact with infected surfaces, through contact with individuals suspected to be infected and through poor hand hygiene. A significant proportion of respondents also opined that transmission could occur: through kissing (92%), through touching the mouth unnecessarily (91%), through sharing of eating utensils like fork/knife/plates (90%), directly through the consumption of contaminated dairy and meat (90%), through poor personal hygiene (86%), directly through cough (85%), through sharing of towel (71%), through going out of the home unnecessarily (71%), through unnecessary vacations (70%), through going to work/Class (69%), Through public transportation (Taxis and buses) (52%). These findings are consistent with the spectra of routes of transmission of the virus found in the literature and other studies [6, 12, 18, 20, 22-25]. The core of these routes of transmission is related to crowded environments where maintenance of appropriate social distance is either impossible or difficult to achieve. Human-to-human, via respiratory droplets or direct contacts, is unanimously now agreed to be the most important mode of transmission of Covid-19 [18, 19, 25, 27].

Attitude towards Covid-19

The present study reveals that the majority of the respondents had a positive attitude towards Covid-19. A highly significant proportion opined that early detection of COVID-19 can improve treatment and outcome (100%); Covid-19 can be avoided by proper precautions (95%); if there is an available vaccine for the disease, it should be used (91%) and that health education can help prevent Covid-19 (71%). Further, all respondents opined that COVID-19 disease does not result in death in all cases. These attitudes are in tandem with literature [7, 35]. A study by Orok, *et al.* revealed a positive attitude and perception among a majority of the medical students [15]. On the contrary, a similar study in Nigeria among medical students revealed a poor attitude towards Covid-19 as only 48.6% of them had a good attitude [6] which is in tandem with a study in Uganda [36].

Prevalence of Covid-19 symptoms

The study sought to investigate the prevalence of Covid-19 symptoms among the students at the peak of the pandemic, in the last One month and in the last week of the study time. During the Peak, all respondents reportedly experienced unusual intense fatigue for no obvious reasons for muscle pain or stiffness without physical activity. Furthermore, during the pandemic, respondents reported difficulties in breathing and other symptom as showed in the result section. The most significant symptoms experienced in the last One month of the study time were stomachache (57%), fever with an oral temperature of 38.1C or higher

(35%), Diarrhea (23%), sore throat (22%) and sudden loss of smell (21%). Finally, in the last week, the significant symptoms reported were nasal congestion (stuffy nose) (80%), a cough or a chronic cough that gets worse (52%) flu-like chills (31%), stomachache (21%) and unusual headache (20%). These presentations correlate with literature reports.

Study Limitations

The questionnaire is subject to recall bias and misclassification

Conclusion

The study sought to assess the level of knowledge of NDU students regarding COVID-19 pandemic, its mode of transmission, clinical presentations and their attitude towards it. In addition, the study evaluated the prevalence of Covid-19 symptoms during the pandemic among the students. The study revealed a higher number of male respondents than females; aged 18-25 years; drawn from the faculties of Pharmacy, Nursing, Management science and Arts; mainly at the 400 level of study and of Ijaw extraction.

Recommendation

It is opined that a strategic educational program be put in place to augment the level of awareness thereby augmenting attitude and practice.

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Author Contributions

EJF: Conceptualization; Supervision; Writing – Review and Editing.

OPA: Conceptualization; Formal analysis; Review and Editing of manuscript.

GGI: Conceptualization; Data collection/curation; Formal analysis; Writing – original draft preparation
All authors have read and agreed to the published version of the manuscript.

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Conflict of Interest

The authors declare no conflict of interest.

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