

Original Article

KNOWLEDGE, ATTITUDE, AND PRACTICES OF DENTAL PATIENTS PRESENTING AT A SECONDARY HEALTH CARE FACILITY IN SOUTHERN NIGERIA TOWARDS COVID-19

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Abstract

Background: With the emergence of the COVID-19 disease, ascertaining the level of knowledge, attitudes and practices of patients will lead to effective patient education, creation of gaps in the life cycle of the SARS-CoV-2 virus and a decrease in the spread of the infection.

Objective: To assess the knowledge, attitudes, and practices of dental patients presenting at a secondary healthcare facility in Southern Nigeria towards COVID-19.

Materials and Methods: This was a cross-sectional descriptive study of dental patients presenting at the Dental department, Central Hospital Benin, Edo State, Nigeria between August 2020 and February 2021. Data on knowledge, attitude and practices were collected using a researcher-administered semi-structured questionnaire. Analysis of data was done using the IBM® SPSS® Statistics version 25 software. Data on categorical variables were expressed as frequencies and percentages. Mean percentage knowledge, attitude and practices was expressed as poor: < 50%, fair: 50% – 69.99%, good: ≥ 70%.

Results: In this study, 244 questionnaires were analysed. The respondents' age ranged from 18 – 93, with a mean and median age of 34.93 ± 13.15 years and 32.00 years, respectively. The mean percentage knowledge (74.81%), attitudes (68.93%), and practices (63.99%) among patients concerning COVID-19 were good, fair, and fair, respectively.

Conclusion: The respondents' knowledge concerning COVID-19 was good; meanwhile, attitudes and practices were fair. There is a need for a more robust health education and promotion programme on COVID-19, due to gaps in relevant sensitisation pathways.

Keywords: Knowledge, Attitudes, Practices, Dental patients, COVID-19.

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INTRODUCTION

Coronaviruses (CoVs) belong to the Orthocoronavirinae subfamily in the Coronaviridae family, and Nidovirales order. There are four genera within the subfamily Orthocoronavirinae, namely Alphacoronavirus (α -CoV), Betacoronavirus (β -CoV), Gammacoronavirus (γ -CoV) and Deltacoronavirus (δ -CoV).¹ The CoV genome is an enveloped, positive-sense, single-stranded RNA with a size varying between 26 kb and 32 kb, the largest genome of known RNA viruses. Both α - and β -CoV genera are

known to infect mammals, whilst δ - and γ -CoVs infect birds. Two recent outbreaks of viral pneumonia caused by β -CoVs are severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS). In 2002, a SARS outbreak was reported in China and spread quickly worldwide, resulting in hundreds of deaths with an 11% mortality rate.¹ In 2012, MERS first emerged in Saudi Arabia and subsequently spread to other countries, with a fatality rate of 37%. In both of these epidemics, the viruses likely originated from bats and then infected

humans through other intermediate animal hosts, e.g., the civet (*Paguma larvata*) for SARS-CoV and the camel for MERS-CoV.¹

In December 2019, several patients with pneumonia of unknown aetiology emerged in Wuhan City, Hubei Province, Central China.^{1,2} Genome sequencing has demonstrated that this pneumonia, named coronavirus disease 2019 (COVID-19), is caused by a novel CoV, namely severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), previously known as 2019 novel coronavirus (2019-nCoV).^{1,3}

As of 4th August 2020, the total number of confirmed COVID-19 cases worldwide is 18.2 million, with 10.9 million recoveries and 692 thousand deaths.⁴ In Nigeria, the figures include 44,129 [with Edo State having 2,311 of the] confirmed cases, 20,663 [with Edo State having 1,984 of the] recoveries and 896 [with Edo State having 87 of the] deaths.⁵

SARS-CoV-2 is highly contagious and can spread through direct means (droplet and human-to-human transmission) and indirect contact (contaminated objects and airborne contagion).⁶ The virus can remain intact and contagious in droplets (less than five microns in diameter) and suspended in the air for up to three hours.⁷

Some of the earliest symptoms after exposure to the virus are commonly recognised as fever, dry cough, tachypnoea, and shortness of breath. Other symptoms include sore throat, sneezing, nasal congestion, sputum production, anosmia and dyspepsia, rash on the skin, discolouration of fingers or toes, and viral conjunctivitis. There has not yet been any vaccine or effective treatment that has received approval. So, the best solution for controlling this pandemic, for the time being, will be the simultaneous application of preventive methods, sensitive diagnostic approaches, and using currently available drugs.⁸

Knowledge is defined as a “familiarity, awareness, or understanding of something, such as facts (descriptive knowledge), skills (procedural knowledge), or objects (acquaintance knowledge).”⁹ Meanwhile, attitudes connote “a learned predisposition to think, feel and act in a particular way towards a given object or class of objects”,¹⁰ while practices entail the act of ruminating

over a behaviour and engaging in the said behaviour repeatedly.¹¹ Moreover, behaviours are the products – in the form of actions – of longstanding attitudes.¹¹

With the emergence of COVID-19 and its probable metamorphosis from an epidemic state towards endemicity, it is vital to ascertain the level of knowledge, attitudes and practices of patients coming for dental care. Firstly, as a background for effective education of dental patients concerning COVID-19, which will eventually lead to gaps in the life cycle of the SARS-CoV-2 virus, and decrease the spread of the infection, within and outside the dental healthcare facility. Secondly, to contribute to the existing body of knowledge concerning COVID-19. A literature search did not show any study carried out concerning the knowledge, attitudes and practices of the dental patient population towards COVID-19 in a secondary healthcare facility in Southern Nigeria.

This study aimed to assess the knowledge, attitudes and practices of dental patients presenting at a secondary healthcare facility in Southern Nigeria towards COVID-19.

MATERIALS AND METHODS

This was a cross-sectional descriptive study of adult dental patients presenting at the Dental centre, Central Hospital Benin, Edo State, Nigeria. The study was conducted between August 2020 and February 2021. Patients who presented at the Dental centre and were eighteen years of age or older were included in the study and those that did not meet this criterion were excluded from the study.

The sample size for the study was calculated using the formula¹²;

$$n = \frac{Z^2 pq}{d^2}$$

Where n = minimum sample size

Z = Standard normal deviation = 1.96 (at 95% confidence value)

p = proportion of the factor under study = 30.47%¹³

$q = 1.0 - p = 1 - 0.3047 = 0.6953$

d = degree of accuracy = 0.05

$$n = \frac{Z^2 pq}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.3047 \times 0.6953}{(0.050)^2}$$

$$n = 325.54$$

Approximately = 326 (rounded up to the nearest whole number)

The calculated minimum sample size was 326.

Using the convenience sampling (non-probability) technique, participants who presented at the Dental centre, and consented to participate in the study, were selected for the study.

Data collection

The data collection instrument was a modified semi-structured questionnaire previously validated and employed by Erfani et al,¹⁴ it consisted of two sections; section A sought information on socio-demographics of the participants. Section B assessed information on the knowledge, attitudes and practices of participants anent COVID-19. The questionnaire was administered by the principal investigator (Omorodion GI).

Informed consent

Written informed consent was obtained from participants using the Nigerian National Health Research Ethics Code model¹⁵; verbal assent was also sought and gotten from the participants.

Statistical analysis

Data generated from this study were analysed using the IBM® SPSS® Statistics version 25 software. Categorical data was expressed as frequencies and percentages. Mean percentage knowledge, attitude and practices was expressed as poor: < 50%, fair: 50% – 69.99%, good: ≥ 70%.

RESULTS

A total of 326 questionnaires were distributed, 300 questionnaires were collected, giving a response rate of 92.0%. However, 244 questionnaires were analysed and 56 questionnaires excluded from analysis due to incomplete data. The respondents' age ranged from 18 – 93 years, with a mean and median age of 34.93 ± 13.15 years and 32.00 years respectively. A total of 88 (36.1%) respondents were males, with a mean age of 34.22 ± 13.42 years, while 156 (63.9%) were females, with a mean age of 35.33 ± 13.02 years. More than one-third of respondents belonged to the 18 – 29 years age group. Most respondents were Binis and Christians. More

patients were married or single and had a tertiary level of education [Table 1].

Table 1: Major socio-demographic characteristics of respondents in relation to sex

Variable	Male n (%)	Female n (%)	Total n (%)
Age group (years)			
18 – 29	38 (43.2)	57 (36.5)	95 (38.9)
30 – 39	24 (27.3)	67 (30.1)	71 (29.1)
40 – 49	12 (13.6)	26 (16.7)	38 (15.6)
50 – 59	13 (11.4)	18 (11.5)	28 (11.5)
60 – 69	3 (3.4)	4 (2.6)	7 (2.9)
70 – 79	0 (0.0)	4 (2.6)	4 (1.6)
≥ 80	1 (1.1)	0 (0.0)	1 (0.4)
Total	88 (100.0)	156 (100.0)	234 (100.0)
Ethnicity			
Bini	46 (52.3)	86 (55.1)	132 (54.4)
Non-Bini*	42 (47.7)	70 (44.9)	112 (45.9)
Total	88 (100.0)	156 (100.0)	234 (100.0)
Religion			
Christianity	83 (94.3)	152 (97.4)	235 (96.3)
Others*	5 (5.7)	4 (2.6)	9 (3.7)
Total	88 (100.0)	156 (100.0)	234 (100.0)
Marital status			
Single	56 (63.6)	62 (39.7)	118 (48.4)
Married	31 (35.2)	89 (57.1)	120 (49.2)
Divorced	1 (1.1)	4 (2.6)	5 (2.0)
Widowed	0 (0.0)	1 (0.6)	1 (0.4)
Total	88 (100.0)	156 (100.0)	234 (100.0)
Level of education			
Illiterate*	0 (0.0)	2 (1.3)	2 (0.8)
Literate*	7 (8.0)	5 (3.2)	12 (4.9)
Primary	6 (6.8)	13 (8.3)	19 (7.8)
Secondary	25 (28.4)	34 (21.8)	59 (24.2)
Tertiary	50 (56.8)	102 (65.4)	152 (62.3)
Total	88 (100.0)	156 (100.0)	234 (100.0)

*Non-Bini: Esan, Etsako, Akoko-Edo, Owan, Igbo, Urhobo, Isoko, Itsekiri, Ika, Yoruba, Ibibio and Kwale. Others: Islam, African traditional religion, Jehovah's witness; Illiterate: Can neither read nor write; Literate: Can read and write, but without any certificate or qualifications.

On respondents' knowledge of COVID-19, almost all respondents; 238 (97.5%) agreed to have heard about COVID-19, 217 respondents (88.9%) believed COVID-19 was a contagious disease and 210 (86.1%) of

respondents correctly identified the COVID-19 causative agent as a virus. Furthermore, 191 (78.3%) of the respondents were right concerning the incubation period of the disease, but only 50 (20.5%) of the respondents thought symptomatic treatment was acceptable. One

hundred and ninety-three (79.1%) of the respondents knew the age group that suffers the greatest severity from the disease. The overall mean percentage knowledge of COVID-19 among respondents was good [Table 2].

Table 2: Respondents' knowledge of COVID-19

Variable	Frequency <i>n</i> (%)
Have you heard about COVID-19?	
Yes	238 (97.5)
No	2 (0.8)
I don't know	4 (1.6)
Total	244 (100.0)
COVID-19 is a contagious disease?	
Yes	217 (88.9)
No	7 (2.9)
I don't know	20 (8.2)
Total	244 (100.0)
COVID-19 is caused by?	
A virus	210 (86.1)
A bacteria	18 (7.4)
I don't know	16 (6.6)
Total	244 (100.0)
How long is the incubation period of the disease?	
Less than 2 days	2 (0.8)
2 – 5 days	13 (5.3)
3 – 14 days	191 (78.3)
I don't know	38 (15.6)
Total	244 (100.0)
Which of the following is acceptable treatment for COVID-19?	
Antibiotics	92 (37.7)
Herbal mixture/Agbo	26 (10.7)
Analgesics	1 (0.4)
Chloroquine	1 (0.4)
Symptomatic therapy	50 (20.5)
I don't know	74 (30.3)
Total	244 (100.0)
In which age group is the disease more dangerous?	
All ages	2 (0.8)
< 15 years	9 (3.7)
15 – 30 years	4 (1.6)
30 – 50 years	21 (8.6)
> 50 years	193 (79.1)
I don't know	15 (6.1)
Total	244 (100.0)

Fever, cough and sore throat is a symptom of COVID-19?	
Yes	231 (94.7)
No	3 (1.2)
I don't know	10 (4.1)
Total	244 (100.0)
Body pain, diarrhoea/constipation and headache is a symptom of COVID-19?	
Yes	118 (48.4)
No	89 (36.5)
I don't know	37 (15.2)
Total	244 (100.0)
To avoid contracting COVID-19, I avoid contact with individuals suspected to be infected with COVID-19?	
Yes	218 (89.3)
No	8 (3.3)
I don't know	18 (7.4)
Total	244 (100.0)
Washing hands with water and soap can eliminate the disease cause?	
Yes	208 (85.2)
No	18 (7.4)
I don't know	18 (7.4)
Total	244 (100.0)
The disease can be transmitted directly through cough and contact with infected surfaces?	
Yes	224 (91.8)
No	7 (2.9)
I don't know	13 (5.3)
Total	244 (100.0)
The disease can be transmitted directly through contact with infected individuals?	
Yes	229 (93.9)
No	5 (2.0)
I don't know	10 (4.1))
Total	244 (100.0)
The disease can be transmitted directly through the consumption of contaminated dairy, meat and other foods?	
Yes	92 (37.7)
No	90 (36.9)
I don't know	62 (25.4)
Total	244 (100.0)
The disease is more dangerous in pregnant women, people with cancer, diabetes, and chronic respiratory diseases?	
Yes	192 (78.7)
No	15 (6.1)

I don't know	37 (15.2)
Total	244 (100.0)
The prevalence of COVID-19 disease is increasing in Nigeria?	
Yes	129 (52.9)
No	73 (29.9)
I don't know	42 (17.2)
Total	244 (100.0)
Overall mean percentage knowledge of COVID-19 among respondents = 74.81%	

Anent respondents' attitude to COVID-19, two hundred and seven (84.8%) of them believed that early detection of COVID-19 could improve treatment outcomes and 119 (48.8%) respondents believed that COVID-19 could not be treated at home. Meanwhile, 217 (88.9%) respondents upheld education as a tool for COVID-19 prevention and

222 (91.0%) were convinced that COVID-19 was a severe health challenge. However, only 138 (56.6%) of the respondents were satisfied with the present societal awareness concerning the disease. The overall mean percentage attitude to COVID-19 among respondents was fair [Table 3].

Table 3: Respondents' attitude to COVID-19

Variable	Frequency <i>n</i> (%)
Can early detection of COVID-19 improve treatment and outcome?	
Yes	207 (84.8)
No	12 (4.9)
I don't know	25 (10.2)
Total	244 (100.0)
Can COVID-19 be treated at home?	
Yes	86 (35.2)
No	119 (48.8)
I don't know	39 (16.0)
Total	244 (100.0)
Can health education help prevent COVID-19?	
Yes	217 (88.9)
No	7 (2.9)
I don't know	20 (8.2)
Total	244 (100.0)
Is COVID-19 a serious disease?	
Yes	222 (91.0)
No	7 (2.9)
I don't know	15 (6.1)
Total	244 (100.0)
Is the awareness concerning COVID-19 disease in society sufficient?	
Yes	138 (56.6)
No	67 (27.5)
I don't know	39 (16.0)
Total	244 (100.0)
Do COVID-19 disease result in death in all cases?	

Yes	90 (36.9)
No	120 (49.2)
I don't know	34 (13.9)
Total	244 (100.0)
Can COVID-19 disease be transmitted through household pets to humans?	
Yes	96 (39.3)
No	77 (31.6)
I don't know	71 (29.1)
Total	244 (100.0)
Should the authorities restrict travel to and from COVID-19 disease areas to prevent contamination?	
Yes	191 (78.3)
No	23 (9.4)
I don't know	30 (12.3)
Total	244 (100.0)
Should the authorities quarantine COVID-19 patients in special hospitals?	
Yes	204 (83.6)
No	11 (4.5)
I don't know	29 (11.9)
Total	244 (100.0)
In the event of an increase in the number of COVID-19 cases, should the authorities be ready to close educational centres (kindergartens, schools, and universities)?	
Yes	180 (73.8)
No	39 (16.0)
I don't know	25 (10.2)
Total	244 (100.0)
Should the authorities be prepared to restrict access to religious sites, shrines, and mosques if the number of COVID-19 cases increases?	
Yes	158 (64.8)
No	55 (22.5)
I don't know	31 (12.7)
Total	244 (100.0)
If the number of COVID-19 cases increases, should the authorities be ready to lock down and quarantine the City?	
Yes	185 (75.8)
No	34 (13.9)
I don't know	25 (10.2)
Total	244 (100.0)
Overall mean percentage attitude to COVID-19 among respondents = 68.93%	

Regarding respondents' practices concerning COVID-19 prevention, one hundred and eighty-eight (77.0%) and 208 (85.2%) of the respondents practised avoidance of unnecessary vacations and avoided shaking hands,

hugging and kissing respectively, as a means of preventing the contraction/spread of the disease. Furthermore, 208 (85.2%) of respondents frequently washed their hands and paid more attention to their

hygiene than usual. More than seven in ten respondents; 176 (72.1%) took vitamin supplements, and 85 (34.8%) of the respondents used facemasks only in public and

crowded places. The overall mean percentage practices concerning COVID-19 prevention among respondents was fair. [Table 4].

Table 4: Respondents' practices concerning COVID-19

Variable	Frequency <i>n</i> (%)
In order to prevent contracting and spreading COVID-19, I avoid going out of my home.	
True	150 (61.5)
False	62 (25.4)
I don't know	32 (13.1)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I avoid unnecessary vacations.	
True	188 (77.0)
False	21 (8.6)
I don't know	35 (14.3)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I avoid consuming outdoor food.	
True	125 (51.2)
False	75 (30.7)
I don't know	44 (18.0)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I avoid handshaking, hugging and kissing.	
True	208 (85.2)
False	9 (3.7)
I don't know	27 (11.1)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I avoid public transportations (taxi, bus, subway, plane, train).	
True	142 (58.2)
False	65 (26.6)
I don't know	37 (15.2)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I avoid going to work.	
True	88 (36.1)
False	111 (45.5)
I don't know	45 (18.4)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I frequently wash my hands.	
True	208 (85.2)
False	5 (2.0)

I don't know	31 (12.7)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I pay more attention to my hygiene than usual.	
True	208 (85.2)
False	2 (0.8)
I don't know	34 (13.9)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, I use disinfectant and solutions.	
True	190 (77.9)
False	15 (6.1)
I don't know	39 (16.0)
Total	244 (100.0)
In order to prevent contracting COVID-19, I take vitamin supplements.	
True	176 (72.1)
False	21 (8.6)
I don't know	47 (19.3)
Total	244 (100.0)
In order to prevent contracting and spreading COVID-19, when do you use facial masks?	
Most of the time	36 (14.8)
Always	94 (38.5)
Only in public and crowded places	85 (34.8)
I don't know	29 (11.9)
Total	244 (100.0)
Overall mean percentage practices concerning COVID-19 among respondents = 63.99%	

DISCUSSION

This is the first study to investigate the knowledge, attitude, and practices of dental patients towards COVID-19 in Edo State, to the best of our knowledge. Similar to previous studies in China and Bangladesh,^{16,17} this study had more female participants, and those with a tertiary level of education.

On average, most respondents were knowledgeable and had fair attitudes and practices concerning COVID-19. This is consistent with finding from a previous study done in Northern Nigeria,¹³ and may be attributed to high number of respondents with tertiary level of education in the population studied.

Similar to the finding of Haque et al,³ and Lee et al,¹⁸ the overall knowledge of respondents concerning COVID-19 was good. Many respondents were aware of COVID-19,

and most respondents knew what the causative agent was; this discovery could be attributed to the high level of education among the respondents. More than seven in ten respondents knew the incubation period for COVID-19 disease and the age group that suffers the highest severity from it, however, only a few respondents thought symptomatic treatment was acceptable; suggesting that COVID-19 sensitisation programmes in society is not detailed enough. Hence, there is a necessity for a more detailed approach in educating Edo citizens about this disease. Programmes could be achieved by various means/modes of communication (radio, television, internet, etc.) and feedback requested for clarification purposes.

The overall attitude of respondents to COVID-19 was fair and this finding is consistent with that, from among

patients coming for COVID-19 screening in Ethiopia.¹⁹ Most respondents had the right attitude concerning the severity of the disease, the role of health education in preventing it, and the importance of early detection to improve treatment and health outcomes. This can also be attributed to their levels of education. However, only a little more than half of the respondents think that societal awareness concerning the disease is sufficient. Furthermore, only a few respondents had the right attitude concerning the sequelae and the mode of transmission of the disease. A little less than half had the right attitude concerning the proper place to treat the disease, highlighting the need to ensure education and health promotion concerning the disease is effective.

The overall practices of respondents concerning COVID-19 were fair, a finding that's in tandem with a study on an Ethiopian population.¹⁹ Many respondents avoided handshaking and other bodily contacts, frequently washed hands, used disinfecting solutions and took vitamin supplements. This may be a reflection that the majority of respondents were young adults and middle-aged individuals with high level of education. Just over half of the respondents avoided using crowded public transport and less than half used facemask appropriately. This may be attributed to a lack of adequate enforcement of instructions by the relevant authorities. Practice they say makes perfect, practice leads to habits, and habits lead to change in behaviour. If the surge in cases is to be abated and COVID-19 combated, necessary authorities need to step up to ensure citizens abide by relevant COVID-19 instructions.

CONCLUSION

The knowledge of respondents concerning COVID-19 was good, while attitudes and practices were fair. There is a need for more robust health education and promotion programmes on COVID-19, as there are still gaps in the attitudes and practices of respondents from this study towards the COVID-19 disease. It is also crucial for authorities mandated with the task of ensuring the compliance of citizens with COVID-19 regulations, to be more proactive and thorough in their assignments.

AUTHORS' CONTRIBUTIONS

Omorodion GI: Conceptualization, Data collection, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing.

Osadolor AJ: Conceptualization, Review of literature, Methodology, questionnaire development and preparation, Data entry, Formal analysis, Writing – original draft, Writing – review & editing.

CONFLICTS OF INTEREST

There are no conflicts of interest.

ETHICAL APPROVAL

This study's protocol was reviewed and approved by the Ethical Committee of the Edo State's Ministry of Health to carry out this study.

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