Original Article

ASSESSMENT OF THE ORAL HEALTH KNOWLEDGE, ATTITUDES AND PRACTICES AMONG DENTAL PATIENTS PRESENTING AT A SECONDARY HEALTHCARE FACILITY IN SOUTHERN NIGERIA.

Osadolor AJ[1]*, Ekariama A[1], Oyibo AI[1], Osadolor OO[2]

[1]Department of Dentistry, Central Hospital Oleh, Delta State, Nigeria.
[2]Department of Child Dental Health, University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State, Nigeria.

*Correspondence: Dr. Osadolor AJ; +234 701 391 9301; aise.osadolor@outlook.com

Abstract

Background: Oral disease is considered an important public health problem because of its high prevalence and effects. Oral diseases are strongly influenced by the patient's belief, attitudes and values.

Objective: To assess the oral health knowledge, attitudes and practices, and its impacts on caries experience and oral hygiene status among dental patients presenting at a secondary healthcare facility in Southern Nigeria.

Materials and Methods: This was a cross-sectional study of adult dental patients presenting at the Dental department, Central Hospital Oleh, Delta State. Data was collected using a semi-structured questionnaire and clinical oral examination. Analysis of data was done using the IBM® SPSS® Statistics version 25 software. Association between variables was tested using Fisher's exact, independent t-test, multinominal logistic and Pearson's regressions. The level of significance α was set at 0.05.

Results: In this study, there were 154 respondents with a mean age of 40.49 ± 17.94 years. The mean percentage oral health knowledge, attitude and practices scores among respondents were fair (66.6% ± 15.1%), good (76.5% ± 8.6%) and fair (66.5% ± 9.4%). The prevalence of dental caries was 49.4%. The mean DMFT and OHI-S among the respondents were 1.21 ± 1.55 and 3.26 ± 1.44. Oral hygiene status was significantly correlated with oral health knowledge and practices ($p < 0.001$).

Conclusion: The knowledge and practices of respondents concerning oral health were fair; meanwhile, their attitudes were good. Oral hygiene was significantly associated with age and sex. Socioeconomic conditions were associated with oral health practices.

Keywords: Knowledge, Attitudes, Practices, Dental patients, Healthcare.

INTRODUCTION

Oral disease is considered an essential public health problem because of its high prevalence and effects; some oral diseases are closely related to lifestyles, which means that a behaviour change is required to decrease oral diseases.[1] The World Health Organisation[2] (WHO) defines 'oral health' as a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing. In 2016 the Fédération Dentaire Internationale (FDI) redefined 'oral health' comprehensively, recognising that oral health was multifaceted, and involved the ability to smell, touch, taste, chew, swallow, smile, speak, and convey many emotions through facial expressions with confidence and without discomfort, pain, and disease of the craniofacial region.[3]

Knowledge, according to Lakhan and Sharma[4] is the capacity to acquire, retain and use information; a mixture of comprehension, experience, discernment and skill;

attitudes refer to inclinations to react in a certain way to certain situations, to see and interpret events according to certain predispositions, or to organise opinions into coherent and interrelated structures; practices mean the application of rules and knowledge that leads to action. Ignorance concerning oral diseases and oral health can be a significant aetiology for a high prevalence of oral diseases. Oral diseases are strongly influenced by the patient's belief, attitudes and values.[5] It is well-documented that the right information, knowledge and practice regarding oral health and disease may serve as an instrument to lead the population with appropriate technology making them adopt healthy practices, protecting their oral health.[6]

Good oral hygiene has been advocated for promoting oral health and preventing oral diseases. Poor oral hygiene practices are an important factor among the causes of periodontal diseases.[7] Practice leads to habits; habits lead to a change in behaviour.[6] A good knowledge of oral health is necessary to pursue healthy oral practices. Oral diseases are related to behaviour; the prevalence of dental caries and periodontal disease has decreased with improvements in oral hygiene.[8] Good oral health, not only promotes an individual to look and feel good; it also helps in preserving oral functions.[8] Multiple studies have demonstrated that sources of oral health knowledge are mass media, dental professionals, dental literature, and health professionals.[1,8] Studies have also shown a direct relationship between increased knowledge of oral hygiene and better oral health.[1,8,9] In a previous Nigerian study[10] among 274 respondents to ascertain the knowledge, attitude towards and practice of oral hygiene among antenatal clinic attendees in public secondary health facilities in Benin City; it was reported that though the respondents had poor knowledge of oral hygiene, there was a positive attitude and good practice of oral hygiene.

A similar study[11] aimed at identifying the extent of dental caries occurrence and its relationship with the dental health knowledge, attitude and practice among adolescents in Ibadan North (LGA) of Oyo State Nigeria; it was reported that a significantly large number of the adolescents displayed the right knowledge, however, analysis of the mean difference in knowledge revealed that male respondents, those within the age range of 11-13 years and those attending private schools, had higher mean dental health knowledge than their counterparts. Attitude towards dental health among adolescents was significantly positive. The practice of dental health among adolescents was reported as 'sound', a majority of respondents, irrespective of gender, age group and type of school being attended, brushed twice daily, used good toothbrush and toothpaste, used the up-down and sideways technique for brushing and claimed to always rinse the mouth with water after each meal. Several studies have been carried out in Nigeria concerning oral health knowledge, attitudes and practices. A previous study conducted in Delta state, Nigeria, was among medical practitioners.[1] This study aims to assess the oral health knowledge, attitudes and practices, and their impacts on caries experience and oral hygiene status among dental patients presenting at a secondary healthcare facility in Southern Nigeria.

MATERIALS AND METHODS
Sample size determination and sampling technique

This was a cross-sectional study of adult dental patients presenting at the Dental department, Central Hospital Oleh, Delta State; The study was conducted between September 2019 and June 2020. The sample size for the study was calculated using the formula;[12]

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

Where n = minimum sample size

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

p = prevalence of the factor under study (50% was used in this study)

q =1.0 - p =1- 0.5 = 0.5

d = degree of accuracy = 0.05

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

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.050)^2}$$

n = 384.16

Approximately = 384

The calculated minimum sample size will be 384

Because the population of this study was finite, the formula below was used for the calculation of the adjusted sample size.

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

$$n = \frac{384}{1 + \frac{(384 - 1)}{263}} = \frac{384}{1 + \frac{(383)}{263}} = \frac{384}{1 + 1.46}$$

$$= \frac{384}{2.46} = 156.09 \approx 156$$

Where n = the new adjusted sample size

n_0 = Cochran's sample size recommendation

N = estimate of study population size = 263

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

SOCIOECONOMIC STATUS DETERMINATION

There is no consensus on various socioeconomic classifications in Nigeria because of the unstructured nature of the society,[13] therefore, in this study, the socioeconomic status of respondents was evaluated using a technique similar to the method used by Oyedeji[14]; socioeconomic index scores will be awarded to respondents based on; (i) monthly income (ii) occupation, and (iii) educational level. These three will be used as independent determinants of Socioeconomic status (SES) (Table 1). Scores will be collated and socioeconomic class classified according to the table below.

Table 1: Socioeconomic class

Total score	Socioeconomic class
≥ 22	High
11 – 21	Middle
≤ 10	Low

ASSESSING DMFT AND ORAL HYGIENE STATUS

The decayed, missing and filled teeth (DMFT/dmft) index was used to assess the patients' caries experience; it describes the number of carious lesions in an individual. It numerically expresses the caries prevalence by calculating the number of decayed, missing teeth due to caries and filled teeth.[15] The sum of the three figures obtained gives the DMFT/dmft value. Restorative index, a measure of restorative care of those who had experienced dental caries, was also calculated. It represents the number of filled teeth divided by the sum of filled and decayed teeth, expressed as a percentage.[16]

The oral hygiene status was assessed using the simplified oral hygiene (OHI-S) index.[17] The OHI-S index is made up of debris and calculus components. The OHI-S score was obtained by summing the debris index and calculus index scores of a patient after examination of the buccal and lingual surfaces of the six index teeth (the upper first molars, lower first molars, upper right central and lower left central incisors). A score of 0 – 1.2 indicates good, 1.3 – 3.0: Fair and 3.1 – 6.0: poor oral hygiene.

Data collection, assessment of knowledge, attitude and practices scores.

The data collection instrument was a semi-structured questionnaire that consisted of three sections; sections A, B and C.

Section A sought information on the socio-demographics and biodata of the participants. Section B assessed information on questions concerning knowledge attitude and practices of participants, and section C clinically examined the dentition with the aid of a dental mirror, dental probe and a bright light source by the principal investigator. Participants who consented to participate in the study were administered the principal investigator's questionnaire while lying comfortably on a dental chair.

Scores were given for the 'knowledge of patients concerning oral health' questions in section B of the questionnaire, a scoring scale of 1 – 3 was adopted for the first five and the tenth question, a score of 1 being for the least correct answer, and a score of 3, for the most correct answer; the sixth, eighth and ninth questions were scored on a scale of 1 – 6, and the seventh, on a scale of 1 – 4.

For the 'attitudes of patients to oral health' questions, a scoring scale of 1 – 3 was used for all ten questions, a score of 1 being for the least correct answer, and 3 for the most correct answer. Meanwhile, the 'practices of patients

concerning oral health' questions were scored on a scale of 1 – 3 for the first nine questions and 1 – 6 for the tenth question.

Percentage knowledge, attitude, and practices concerning oral health were each estimated by adding the respondent's cumulative scores for each question, dividing it by the total possible score, gotten from adding the maximum possible score for each question, and multiplying by a hundred (100).

STATISTICAL ANALYSIS

Data generated from this study were analysed using the IBM® SPSS® Statistics version 25 software. Descriptive data were expressed as frequencies and percentages; the difference in proportion was tested using Fisher's exact test at a 95% confidence interval. The difference in means between two groups was tested using an independent sample t-test. Multinominal logistic regression analysis was performed to assess the variable/s which was a significant predictor of oral health status and socioeconomic status. Pearson's regression analysis was also computed to assess the level of correlation between percentage knowledge, attitude and practices, oral hygiene status and DMFT. The level of significance α was set at 0.05.

ETHICAL REVIEW AND APPROVAL

The protocol for this study was reviewed and approved by the Ethical Committee of the Delta State's Hospitals Management Board to carry out this study. Written informed consent was obtained from participants using the Nigerian National Health Research Ethics Code model[18]; verbal assent was also sought and gotten from the participants.

RESULTS

A total of $n = 156$ respondents, out of which $n = 154$, participated and continued until the end of the study; $n = 2$ respondents opted-out mid-way through the study, giving a response rate of 98.7%. The respondents' age ranged from 18 – 91, with a mean age of 40.49 ± 17.94 years. A total of $n = 75$ respondents were males, with a mean age of 40.08 ± 18.87; meanwhile, $n = 79$ were females, with a mean age of 39.92 ± 17.10. More than one-third of respondents belonged to the 18 – 29 age group. Meanwhile, a majority of respondents were Isokos and Christians. More patients were married than single or divorced/separated and belonged to the middle than low and high socioeconomic status classes [Table 2].

Table 2: Major socio-demographic characteristics, dental caries/oral hygiene status, and KAP distribution among respondents in relation to sex

Variable	Male n (%)	Female n (%)	Total n (%)	Fisher's exact (p-value)
Age group (years)				
18 – 29	30 (40.0)	30 (38.0)	60 (39.0)	
30 – 39	8 (10.7)	12 (15.2)	20 (13.0)	
40 – 49	13 (17.3)	18 (22.2)	31 (20.1)	4.82 ($p > 0.582$)
50 – 59	13 (17.3)	7 (8.9)	20 (13.0)	
60 – 69	3 (4.0)	6 (7.6)	9 (5.8)	
70 – 79	7 (9.3)	5 (6.3)	12 (7.8)	
≥ 80	1 (1.3)	1 (1.3)	2 (1.3)	
Ethnicity				
Isoko	58 (77.3)	62 (78.5)	120 (77.9)	15.35 ($p > 0.221$)
Non-Isoko*	17 (22.7)	17 (21.5)	34 (22.1)	
Religion				
Christianity	71 (94.7)	79 (100.0)	150 (97.4)	3.82 ($p > 0.051$)
Others*	4 (5.3)	0 (0.0)	4 (2.6)	
Marital status				
Single	35 (46.7)	32 (40.5)	67 (43.5)	1.71 ($p > 0.414$)
Married	39 (52.0)	47 (59.5)	86 (55.8)	
Divorced/Separated	1 (1.3)	0 (0.0)	1 (0.6)	
SES* class				
Low	31 (41.3)	40 (50.6)	71 (46.1)	1.44 ($p > 0.480$)
Middle	41 (54.7)	36 (45.6)	77 (50.0)	
High	3 (4.0)	3 (3.8)	6 (3.9)	
Dental caries				
Present	32 (42.7)	44 (55.7)	76 (49.4)	9.56 ($p > 0.080$)

Absent	43 (57.3)	35 (44.3)	78 (50.6)	
OHS **Good** **Fair** **Poor**	3 (4.0) 35 (46.7) 37 (49.3)	5 (6.3) 35 (44.3) 39 (49.4)	8 (5.2) 70 (45.5) 76 (49.4)	0.47 (*p* >0.891)
OHK* category **Good** **Fair** **Poor**	37 (49.3) 34 (45.3) 4 (5.3)	35 (44.3) 28 (35.4) 16 (20.3)	72 (46.8) 62 (40.3) 20 (13.0)	7.84 (*p* <0.019)
OHA* category **Good** **Fair** **Poor**	64 (85.3) 11 (14.7) 0 (0.0)	60 (75.9) 19 (24.1) 0 (0.0)	124 (80.5) 30 (19.5) 0 (0.0)	2.2 (*p* >0.142)
OHP* category **Good** **Fair** **Poor**	21 (28.0) 51 (68.0) 3 (4.0)	25 (31.6) 52 (65.8) 2 (2.5)	46 (29.9) 103 (66.9) 5 (3.2)	0.53 (*p* >0.784)
Total *n* (%)	75 (100)	79 (100)	154 (100)	

*Non-Isoko: Kwale, Aniocha, Ibibio, Esan, Hausa, Nkwani, Ora, Urhobo, Ijaw, Igbo, Yoruba, Edo, Ndokwa, Ika. Others: Islam, African traditional religion, Judaism; SES: Socioeconomic status; OHS: Oral hygiene status; OHK: Oral health knowledge; OHA: Oral health attitude; OHP: Oral health practices; KAP: Knowledge, attitude and practices.

On respondents' knowledge of oral health; over one-half, *n* = 99 (64.3%) of the respondents reported 'friends and family' as their source of dental information, a majority *n* = 102 (66.2%) agreed that cleaning the teeth can prevent tooth decay, gum bleeding and tooth loss, and *n* = 106 (68.8%) of respondents believed that eating sweet things and taking soft drinks frequently, could cause toothache. Furthermore, only 26.6% (*n* = 41) and 12.3% (*n* = 19) of respondents knew what fluoride was and when one`s teeth were supposed to be brushed. The mean percentage oral health knowledge score (66.6% ± 15.1%) among respondents was fair [Table 3]. According to sex, males (68.9% ± 13.0%) had a higher mean percentage oral health knowledge score than females (64.4% ± 16.6%), (*t* = 1.87 *p* > 0.064). More respondents had significantly good *n* = 72 (46.8%) oral knowledge than fair *n* = 62 (40.3%) or poor *n* = 20 (13.0%) oral knowledge (*p* < 0.019) [Table 1]. Knowledge of oral health was mildly directly correlated to respondents' practices concerning oral health (*r* = 0.279, *n* = 154, *p* < 0.001).

Table 3: Respondents' knowledge of oral health

Variable	Frequency *n* (%)
What is your source of dental information? **Friends and family** **Teacher and school** **Television/radio/internet** **Dentist** **Professional colleagues** **Medical doctor** **Others*** **Total**	99 (64.3) 11 (7.1) 12 (7.8) 20 (13.0) 1 (0.6) 6 (3.9) 5 (3.0) **154 (100.0)**
Can cleaning the teeth prevent tooth decay, gum bleeding and tooth loss? **Yes** **No** **I don't know** **Total**	102 (66.2) 12 (7.8) 40 (26.0) **154 (100.0)**
Can eating sweets and drinking soft drinks frequently cause tooth decay? **Yes** **No** **I don't know** **Total**	106 (68.8) 17 (11.0) 31 (20.1) **154 (100.0)**
Do you know what is called 'fluoride'?	

Yes	41 (26.6)
No	113 (73.4)
Total	**154 (100.0)**
Can regular visits to the dentist prevent dental problems?	
Yes	120 (77.9)
No	10 (6.5)
I don't know	24 (15.6)
Total	**154 (100.0)**
What do you think is the role of toothpaste when used in brushing your teeth?	
It kills germs	23 (14.9)
It tastes good	0 (0.0)
It gets rid of dirt on the teeth	50 (32.5)
All the above	72 (46.8)
I don't know	8 (5.2)
It tastes good and gets rid of dirt on the teeth	1 (0.6)
Total	**154 (100.0)**
Concerning meals, when should you brush your teeth?	
After meals	19 (12.3)
Before meals	19 (12.3)
In between meals	1 (0.6)
Before breakfast and after dinner	66 (42.9)
Before breakfast	46 (29.9)
After breakfast	3 (1.9)
Total	**154 (100.0)**
The best way to prevent dental caries/cavities is by?	
Brushing teeth after meals	31 (20.1)
Regular dental check-up	20 (13.0)
Avoiding sugary foods	14 (9.1)
All of the above	86 (55.8)
I don't know	2 (1.3)
Brushing teeth after meals and regular dental check-up	1 (0.6)
Total	**154 (100.0)**
Why should you brush your teeth?	
To avoid bad breath	20 (13.0)
To avoid tooth decay	20 (13.0)
To prevent gum disease	6 (3.9)
All the above	108 (70.1)
Total	**154 (100.0)**
Untreated holes/cavities lead to?	
Pain in teeth	69 (44.8)
Holes developing in other tooth/teeth	22 (14.3)
Broken teeth	5 (3.2)
All of the above	26 (16.9)
I don't know	27 (17.5)
Others**	5 (3.2)
Total	**154 (100.0)**
Mean percentage oral health knowledge score among respondents = 66.6% ± 15.1%	

*Others: All the above, Pastor, Nurse, Patent medicine seller, Police. ** Others: Pain in teeth and broken teeth, Pain in teeth and holes developing in other tooth/teeth.

On respondents' attitudes to oral health; a majority of respondents $n = 130$ (84.4%) agreed that regular visits to the dentist were necessary, slightly above the average of respondents $n = 83$ (53.9%) believed that dentists were role players both at the treatment phase and at the prevention phase of oral diseases. About 67.5% ($n = 104$) of respondents thought that cleaning the teeth could not be done very well without toothpaste. Meanwhile, $n = 80$ (51.9%) and $n = 50$ (32.5%) of respondents stated that they were not nervous about [the thought of] having dental treatment, and they had avoided dental treatment due to the 'cost factor' respectively. The mean percentage oral health attitude score (76.5% ± 8.6%) among respondents was good [Table 4]. According to sex, males (76.7% ± 7.2%) had a higher mean

percentage oral health attitude score than females (76.2% ± 9.7%), ($t = 0.34$ $p > 0.737$). There were no respondents in the poor attitude category to oral health, with most respondents being at the good $n = 124$ (80.5%) attitude category [Table 4].

Table 4: Respondents' attitudes to oral health

Variable	Frequency *n* (%)
Are regular visits to the dentist necessary?	
Yes	130 (84.4)
No	14 (9.1)
I don't know	10 (6.5)
Total	**154 (100.0)**
Do dentists play a role only in the treatment phase and not in the prevention phase of oral diseases?	
Yes	36 (23.4)
No	83 (53.9)
I don't know	35 (22.7)
Total	**154 (100.0)**
Can cleaning of the teeth be done very well, without using toothpaste?	
Yes	49 (31.8)
No	104 (67.5)
I don't know	1 (0.6)
Total	**154 (100.0)**
Does dental treatment make you nervous?	
Slightly	40 (26.0)
Extremely	34 (22.1)
No	80 (51.9)
Total	**154 (100.0)**
Have you ever avoided a dental visit due to the 'cost' factor?	
Yes	50 (32.5)
No	104 (67.5)
Total	**154 (100.0)**
Is having good oral hygiene important?	
Yes	152 (98.7)
No	2 (1.3)
Total	**154 (100.0)**
Is tobacco chewing a bad habit?	
Yes	142 (92.2)
No	12 (7.8)
Total	**154 (100.0)**
Is Smoking in any form a bad habit?	
Yes	150 (97.4)
No	4 (2.6)
Total	**154 (100.0)**
The hardness of a toothbrush's bristles affects the teeth and gums?	
Yes	131 (85.1)
No	23 (14.9)
Total	**154 (100.0)**
Is it necessary to replace a missing tooth/teeth with an artificial tooth/teeth?	
Yes	56 (36.4)
No	98 (63.6)
Total	**154 (100.0)**
Mean percentage oral health attitude score among respondents = 76.5% ± 8.6%	

On respondents' practices concerning oral health, only 39% ($n = 60$) of respondents had visited the dentist before the present study, about 43.5% ($n = 67$) of respondents reported consulting a dentist when they had a toothache

or a painful/bleeding gum. Furthermore, $n = 114$ (74.0%) of respondents visited the dentist only when they had a toothache, a majority $n = 133$ (86.4%) and 55.2% ($n = 85$) of respondents used a toothbrush and toothpaste for cleaning their teeth and brushed only once daily respectively. The mean percentage oral health practices score (66.5% ± 9.4%) among respondents was fair [Table 5]. According to sex, females (66.7% ± 9.3%) had a higher mean percentage oral health practices score than males (66.2% ± 9.4%), ($t = 0.38$ $p > 0.704$). A majority of respondents had fair $n = 103$ (66.9%) oral hygiene practices [Table 1]. Practices of respondents concerning oral health were discovered to be mildly directly correlated to oral health knowledge ($r = 0.279$, $n = 154$, $p < 0.001$).

Table 5: Respondents' practices concerning oral health

Variable	Frequency *n* (%)
Have you ever visited a dentist before now?	
Yes	60 (39.0)
No	94 (61.0)
Total	**154 (100.0)**
When you have a toothache or bleeding/painful gum, what do you always do?	
I consult a patent medicine store	57 (37.0)
I go to the market and buy 'touch and go'	11 (7.1)
I consult a nurse	3 (1.9)
I consult a dentist	67 (43.5)
I consult peers, relatives, herbalists for advice	16 (10.4)
Total	**154 (100.0)**
When do you usually visit the dentist?	
When I have toothache/pain	114 (74.0)
When my gums are bleeding	6 (3.9)
Only when there is dirt or tartar on the teeth	5 (3.2)
Every six months	20 (13.0)
Others*	9 (5.8)
Total	**154 (100.0)**
What tools do you use for cleaning your teeth?	
Toothbrush and toothpaste	133 (86.4)
Chewing stick	6 (3.9)
Charcoal	1 (0.6)
Salt and water	0 (0.0)
All the above	5 (3.2)
Toothbrush & toothpaste, and chewing stick	5 (3.2)
Toothbrush & toothpaste, and salt & water	4 (2.6)
Total	**154 (100.0)**
How often do you brush your teeth?	
Daily	149 (96.8)
Weekly	3 (1.9)
Monthly	2 (1.3)
Total	**154 (100.0)**
If you brush your teeth daily, how many times do you do it?	
No! I don't brush daily	5 (3.2)
Once	85 (55.2)
Twice	60 (39.0)
Three times	4 (2.6)
Total	**154 (100.0)**
Do you brush your tongue?	
Yes	140 (90.9)
No	14 (9.1)
Total	**154 (100.0)**
How much time do you spend brushing?	
Less than 2 minutes	40 (26.0)

2 minutes	27 (17.5)
More than 2 minutes	84 (54.5)
Variable (depending on schedule)	3 (1.9)
Total	**154 (100.0)**
If applicable, how often do you change your toothbrush?	
Once per year	5 (3.2)
After every three months	95 (61.7)
After every six months	13 (8.4)
Only when it gets lost	34 (22.1)
Non-applicable	6 (3.9)
When the bristles become splayed	1 (0.6)
Total	**154 (100.0)**
Do you use any of these in addition to tooth brushing?	
Dental floss	6 (3.9)
Toothpick	89 (57.8)
Mouthwash	11 (7.1)
All of the above	1 (0.6)
None of the above	46 (29.9)
Toothpick and mouthwash	1 (0.6)
Total	**154 (100.0)**
Mean percentage oral health attitude score among respondents = 66.5% ± 9.4%	

*Others: I have never visited, Every one year, occasionally

Over an average of patients were caries-free $n = 78$ (50.6%), giving a dental caries prevalence of 49.4%. Caries experience was noticeably more prevalent among females ($n = 44$) than males ($n = 32$) [Table 2]. The mean DMFT among the respondents was 1.21 ± 1.55. The mean prevalence (55.7%) and mean DMFT (1.42 ± 1.71) were higher in females than males (42.7%, 1.00 ± 1.34). According to age groups, the mean DMFT among respondents was highest in the ≥ 70 age group (1.64 ± 1.78) [Table 6]. Decayed teeth (DT) were a major contributor to DMFT; the proportion of decayed, missing and filled teeth was 67.4%, 31.5% and 1.1%, respectively. Among the individuals who had a DMFT ≥ 1, caries accounted for 67.4% and, of these, 51.7% had only one carious lesion DT = 1 [Fig 1]. More carious teeth were recorded on the mandible (56.3%) than the maxilla (43.7), and caries was more prevalent on the permanent first molars (36.5%). [Table 6]. The correlation between DMFT and oral hygiene, percentage knowledge, attitude and practices scores were insignificant ($p > 0.05$).

Table 6: Mean DMFT scores according to age and sex of the patients.

Variable	Frequency (%)	Mean DMFT ± SD	Mean OHI-S ± SD
Age group (in years)			
18 – 29	60 (39.0)	1.23 ± 1.52	2.50 ± 1.27
30 – 39	20 (13.0)	1.00 ± 1.12	3.23 ± 1.23
40 – 49	31 (20.1)	1.23 ± 1.91	3.61 ± 1.31
50 – 59	20 (13.0)	1.10 ± 1.29	3.98 ± 1.45
60 – 69	9 (5.8)	1.11 ± 1.54	3.59 ± 1.26
≥ 70	14 (9.1)	1.64 ± 1.78	4.51 ± 1.14
Total	**154 (100.0)**	**1.21 ± 1.55**	**3.26 ± 1.44**
Sex			
Male	75 (48.7)	1.00 ± 1.34	3.24 ± 1.39
Female	79 (51.3)	1.42 ± 1.71	3.28 ± 1.50
Total	**154 (100.0)**	**1.21 ± 1.55**	**3.26 ± 1.44**

Table 7: Distribution of dental caries between jaws and among different teeth in respondents

Variable	Frequency (%)
Tooth type	
Permanent Central incisors	2 (1.6)
Permanent Lateral incisors	0 (0.0)
Permanent Canines	1 (0.8)
Permanent First premolars	5 (4.0)
Permanent Second premolars	10 (7.9)
Permanent First molars	46 (36.5)*
Permanent Second molars	38 (30.2)
Permanent Third molars	24 (19.0)
Total	**126 (100.0)**
Jaw type	
Maxilla	55 (43.7)
Mandible	71 (56.3)*
Total	**126 (100.0)**

*$p < 0.001$

Concerning oral hygiene, $n = 8$ (5.2%) of respondents had good oral hygiene, $n = 70$ (45.5%) and $n = 76$ (49.4%) had fair and poor oral hygiene, respectively, there was an almost equal representation of the oral hygiene categories across sexes [Table 1]. For every one-year increase in the age of respondents, there was a 24.9% likelihood of having poor oral hygiene (Odds ratio (OR) = 1.249, CI = 1.036 – 1.505 $p < 0.021$). Meanwhile, the male respondents had a 79.4% likelihood of having poor oral hygiene compared to their female counterparts (Odds ratio (OR) = 1.794, CI = 0.352 – 9.142 $p > 0.482$). The mean debris index score (DI-S) and calculus index score (CI-S) were 1.80 ± 0.69 and 1.46 ± 0.80, respectively, giving a mean oral hygiene index simplified (OHI-S) score of 3.26 ± 1.44. According to age groups, the mean OHI-S score among respondents was highest in the ≥ 70 age group (4.51 ± 1.14). The mean oral hygiene index simplified (OHI-S) score according to sex was slightly lower for males (3.24 ± 1.39) than for females (3.28 ± 1.50), ($t = -0.16$ $p > 0.875$) [Table 5]. A Pearson's regression was computed to assess the relationship between oral hygiene status and knowledge attitude and practices of respondents; results revealed a significantly mild inverse correlation between oral hygiene status and knowledge ($r = -0.213$, $n = 154$, $p < 0.0081$). and practices ($r = -0.284$, $n = 154$, $p < 0.001$) concerning oral health. The relationship between oral hygiene status and attitudes to oral health among respondents was, however, non-significantly correlated ($r = -0.013$, $n = 154$, $p > 0.871$).

With regards to socioeconomic status, there were more respondents in the low $n = 71$ (46.1%) and middle $n = 77$ (50.0%) status categories than in the high $n = 6$ (3.9%). Female respondents $n = 40$ were more than their male counterparts $n = 31$ at the low socioeconomic class, conversely, males $n = 41$ were more than females $n = 36$ at the middle socioeconomic class [Table 1]. There was a 7.4% decrease in the likelihood of being at the low socioeconomic class with every one-year increase in age (OR = 0.926(CI = 0.872 – 0.983) $p > 0.012$). Furthermore, a 15.4% decrease in the likelihood of a respondent being at the low socioeconomic class for every 1% increase in percentage oral health practice score (OR = 0.856 (CI = 0.761 – 0.964) $p < 0.011$) was discovered, meanwhile, the likelihood of a respondent being at the low socioeconomic class for every 1% increase in percentage knowledge and attitude scores increased by 0.5% (OR = 1.005 (CI = 0.939 – 1.079) $p > 0.884$) and -7.5% (OR = 0.925 (CI = 0.834 – 1.025) $p > 0.134$). The restorative index among the respondents in this study was estimated to be 1.56%

Table 8: Estimation of the restorative index among respondents.

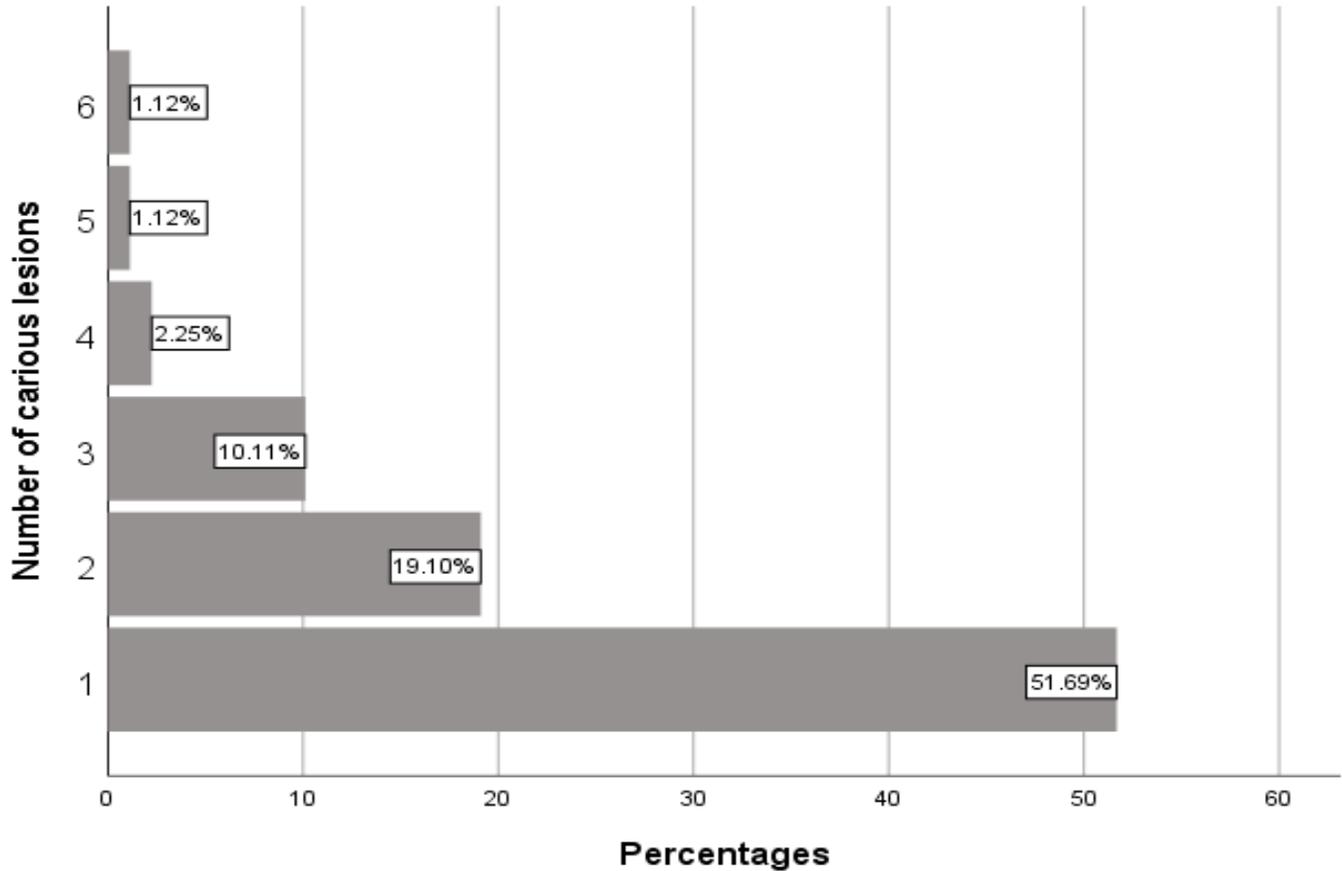| Variable	Frequency
Decayed teeth	126
Filled teeth	2
Decayed + Filled teeth	128
Restorative index = $\dfrac{Filled\ teeth}{Decayed\ teeth + Filled\ teeth} = \dfrac{2}{128} = \mathbf{1.56\%}$	

Figure 1: Distribution of the number of carious lesions among respondents

DISCUSSION

The essence of proper knowledge of oral healthcare management cannot be overemphasised in modern dentistry, as attitudes towards oral health are usually intertwined with the conditions of the oral cavity.[1] The nature of the relationship between health-related attitudes, beliefs, and behaviours is complex. Various categories of factors that may influence health behaviour include knowledge, attitudes, beliefs, values, skills, finance, materials, time, and the influence of family members, friends, coworkers, opinion leaders, and even health workers themselves. Individuals who have assimilated the knowledge and feel a sense of personal control over their oral health are more likely to adopt self-care behaviour.[19] In this study, respondents' knowledge and practices concerning oral health were fair; meanwhile, their attitudes were good.

The overall oral health knowledge among respondents was fair. Friends and family were the most reported source of dental information, a finding that was contrary to that of a previous study,[10] and may be attributed to the rural nature of the locality where the studied hospital is located (Oleh). Most of the respondents agreed to the practice of toothbrushing and proper dietary habits in preventing dental diseases. A lot of respondents were not conversant with what 'fluoride' was but admitted the relevance of dental visits in the prevention of dental diseases. Only a few respondents knew the right time for toothbrushing, and about two-fifths of respondents knew the sequelae of dental caries. Oral health knowledge was revealed to be significantly correlated with practices concerning oral health among the respondents.[20]

Attitudes towards oral health determine the oral health of an individual.[21] The overall oral health attitude among respondents was good. The majority of respondents attested to the necessity of regular dental visits, the ability of toothpaste to enhance toothbrushing and the importance of having good oral hygiene. Only a little above average of respondents was not anxious about the thought of having dental treatment. Most respondents believed that smoking and tobacco chewing were bad habits.

The overall oral health practice among respondents was fair. Above-average of respondents had never visited the dentist previously. This finding was a contrast to a

previous study,[22] and may be attributed to the differences in the inhabitants' socioeconomic statuses in the locality where both studies were conducted and the perceived unaffordability of acquiring oral healthcare services. Less than average respondents consulted the dentist when faced with a dental challenge, and few made appropriate regular dental visits.[23] Meanwhile, more than one-half of respondents agreed to toothpick use, and a very few, to the use of dental floss or antibacterial mouthwash. These findings may be ascribed to personal ignorance concerning ideal oral health practices.

More respondents were in the fair and poor oral hygiene category than the good. The likelihood of being in the poor oral hygiene category was seen to significantly increase with age and was insignificantly higher in males. Oral hygiene status scores were discovered to mildly decrease significantly (i.e. oral hygiene status mildly improves) with an increase in oral health knowledge and practices. Many respondents were in the low and middle socioeconomic classes. The likelihood of being in the low socioeconomic class was discovered to significantly decrease with age. Meanwhile, the odds of belonging to the low socioeconomic class was found to decrease with an increase in oral health practices significantly. The relationship between socioeconomic class and oral health knowledge and attitudes were, however, not significant.

There was a limitation of using a non-probability sampling technique in this study, and some respondents opted-out of the study midway through the data collection.

CONCLUSION
The knowledge and practices of respondents concerning oral health were fair; meanwhile, their attitudes were good. Oral hygiene was significantly associated with age and sex. Socioeconomic conditions were associated with oral health practices.

FINANCIAL SUPPORT AND SPONSORSHIP
None.

CONFLICTS OF INTEREST
There are no conflicts of interest.

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