

Original Article

Can oral health-related quality of life be worsened by dental appointments?

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ABSTRACT

Background: Constraints in dental access and limitations associated with service delivery necessitate the use of an appointment system in patient care. This research aimed to identify association between treatment appointments and oral health-related quality of life (OHRQOL) in dental patients at the Lagos State University Teaching Hospital.

Materials and Methods: This was a descriptive study that surveyed 412 individuals. Socio-demographic, clinical history, and OHRQOL data was collected using a structured interviewer administered questionnaire. Visual analog scale (VAS) was used to assess inconvenience while the oral health impact profile-14 was used for OHRQOL assessment at baseline and at review. Data entry and analysis was done using SPSS while ANOVA and Chi-square tests were used to determine significant association. $P < 0.05$ was considered significant.

Results: Most (175; 45.2%) dental appointments were within a month although 59 (15.2%) individuals had to wait for more than 6 months. Using VAS, 87 (22.5%) individuals were moderately inconvenienced while 68 (17.6%) were extremely inconvenienced. At baseline, the most commonly reported oral health quality of life impacts were within the dimensions “physical pain” and “psychological discomfort.” At review, there was increase in OHRQOL scores in the subdomains of pain (2.27 ± 1.80), self-consciousness (1.67 ± 1.15), discomfort on chewing (1.61 ± 1.13), and pronouncing words (1.49 ± 2.21). The highest mean impact score (2.27 ± 1.80) was observed in the subdomain of painful aching in the mouth.

Conclusion: Dental appointments appear to result in worse OHRQOL. Since the appointment systems in public oral health facilities may have a direct bearing on OHRQOL of patients, quality control standards on dental appointments should be established and enforced.

Key Words: Dental appointment, oral health-related quality of life, oral health

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INTRODUCTION

Oral health is a state of being free from chronic orofacial pain, oral and pharyngeal cancer, and oral soft tissue lesion, birth defect such as cleft lip and palate, and disorders that affect oral dental and

craniofacial tissues.^[1] Dental clinic attendance is positively related to quality of life,^[2] and pattern of regular dental visit at least once a year complements self-care in maintaining good oral health. Patients

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that visit the dentist regularly have oral diseases detected at an earlier stage, while avoidance of the dental clinic can result in untreated oral diseases and conditions, compromised health status, and even death.^[3] However, a lot of patients put off dental visits for reasons ranging from perceptions of need, lack of access, financial costs, and psychosocial factors such as dental anxiety.

The utilization of dental services is frequently driven by symptoms, often resulting in the need for curative care.^[4] In addition, many countries in Africa, Asia, and Latin America have an inadequate number of dental care professional, and the capacity of dental care services is generally restricted to emergency dental care and pain relief. Delayed treatment prevents people from achieving and maintaining good oral health, and it has implications for an individual's social and economic participation within society and may impact on their oral health-related quality of life (OHRQOL).^[5-7]

Over the last 30 years, the use of sociodental indicators in oral epidemiology has been widely advocated, because single measures of clinical disease do not document the full impact of oral disorders.^[8] The Oral Health Impact Profile (OHIP-14)^[9] is one of the most comprehensive instruments available for measuring OHRQOL.^[10] Oral disease and conditions can undermine self-image and self-esteem, discourage normal social interaction, and cause other health problems and lead to chronic stress and depression as well as incur great financial cost. They may also interfere with vital functions such as breathing, food selection eating, swallowing and speaking, and with activities of daily living such as work, school, and family interactions.^[7] Constraints in dental access and limitations associated with service delivery necessitates the use of an appointment system in patient care.^[11] This added delay in accessing care may be associated with heightened anxiety, inadequate pain relief, and heightened aesthetic concerns for patients with fractured or missing anterior teeth, prolonged taste impairment and unresolved speech difficulties.^[7] There is however a dearth of literature on the impact of dental appointment on the OHRQOL of patients.

This study thus aimed to determine if the OHRQOL in a group of dental patients at the Lagos State University Teaching Hospital (LASUTH) was worsened by dental appointment.

MATERIALS AND METHODS

Study location

A descriptive study of dental patients at the LASUTH was conducted using an interviewer-administered questionnaire which was pretested. LASUTH is one of the tertiary health institutions located within Lagos State, and it is a referral center, meeting the health needs of most residents within Lagos and its environs.

Ethical considerations

The protocol for the study was submitted to the LASUTH Health Research and Ethics Committee and written approval was obtained (LREC. 06/10/854). Participation was voluntary, and the individuals were informed that they were free to decline to enlist and to withdraw from the study. Written informed consent was obtained from all the participants.

Sample selection

Using the prevalence of 31.24% for high level of inconvenience from a reference study,^[12] a sample size of 330 was determined. The sample was however increased to 412 by dividing the sample size by 0.8 to make provision for 20% attrition. The study population consisted of patients referred to the departments of preventive dentistry, restorative dentistry, oral and maxillofacial surgery and child dental health at the dental center. A systematic random sampling technique was done with initial categorization into four clinical departments and subsequent selection of respondents on each clinic day using the appointment register for each clinic day as the sampling frame. The sampling interval for each department (preventive dentistry: 3, restorative dentistry: 4, oral and maxillofacial surgery: 4, and child dental health: 3) was determined based on the number of patients booked on each day, and individuals were systematically selected using this interval as they received their appointment date.

Inclusion and exclusion criteria

Those included in the study were individuals who were 18 years or older that presented with a dental condition and were given an appointment for any routine dental procedure. Those excluded from the study were those that had tumors and severe maxillofacial injuries that would require general anesthesia, those that had a known anxiety disorder, patients with uncontrolled systemic comorbid conditions, and those that refused to give their informed consent.

Data collection and data collection tool

Data collection was done using a structured interviewer administered questionnaire by the researchers. The sample size was calculated using a formula for descriptive studies: $N = Z pq/d^2$. Two interviewer-administered questionnaires were used for data collection. The first questionnaire was used at baseline when the individuals received their appointment after obtaining their informed consent, while the second one was administered on the treatment appointment day. The first questionnaire comprised of closed-ended question which obtained sociodemographic information; dental history and utilization of dental services by study participants; and the OHIP-14 section that measured OHRQOL. Sociodemographic information obtained included gender, age, marital status, education, occupation, and the income level of respondents. Dental history of the participants determined their pattern of attendance, reason for dental visit, and appointment duration. For each of the OHIP-14 questions in the OHIP segment, individuals rated how frequently they had experienced an impact in the preceding weeks, on a 5-point Likert scale with scores ranging from 0 to 4.

The second questionnaire determined the self-help practices the individuals resorted to while awaiting their appointment, reassessed their OHRQOL using the OHIP-14, and determined the level of inconvenience caused by the appointment using the visual analog scale (VAS). The 10-cm long line or VAS, which has a minimum score of 0 and a maximum score of 10, was used to determine the inconvenience the individuals experienced during the waiting time for the dental appointment.^[13]

Data analysis

Descriptive and inferential statistics were computed using SPSS (Statistical package for social sciences) for Windows (version 20, Chicago, IL, USA). Frequency distribution tables were generated for all variables, and measures of central tendency and dispersion were computed for numerical variables. Chi-square was used to determine the level of association between categorical variables while ANOVA was used to compare means. To calculate the OHIP-14 impact scores for individual domains, the individuals' individual domain scores was computed to give a maximum score of 4. For individual, subdomain scores 0, 1, and 2 were classified as low impact while scores 3 and 4 were classified as high

impact. To calculate the overall OHIP-14 total impact score for all domains, item response codes were summed to give the final scores, with possible scores ranging from 0 to 56 which indicates the severity of OHRQOL impacts. The OHIP-14 final impact scores were classified as low (0–18.9), moderate (19–37.9), and high (38–56) to describe the impact level in the study population. Differences and associations were considered statistically significant where the associated $P \leq 0.05$.

RESULTS

Sociodemographic characteristics of the study population

Three hundred and eighty-seven individuals with mean age of 26.0 ± 7.5 and age range between 26 and 76 years who kept their treatment appointment were included in the final analysis. The highest percentage of individuals (100; 25.8%) were in the ≤ 20 years age category, and there were more females (221; 57.1%) enrolled in the study. The majority of participants (195; 50.4%) were married while 244 (63.0%) had tertiary education and 209 (54.0%) had never visited the dentist before [Table 1].

Reasons for treatment scheduled appointment

The highest percentage of individuals (29.5%) were scheduled for dental extraction, while root canal therapy was the least scheduled dental treatment (34; 8.8%) [Table 2].

Appointment duration and patients' self-care practices during waiting period

Majority (184; 47.5%) of individuals waited for an hour before being attended to while 4.4% had to wait for more than 5 h before being seen. The highest proportion (175; 45.2%) of the dental appointments were within a month although 15.2% had to wait for more than 6 months. During the waiting time, most (210; 54.3%) of the individuals did nothing, while others resorted to use of warm saline mouthwash (17.1%), self-medication (10.9%), and consultation of a chemist (8.5%) [Table 3].

How individuals felt when they were given an appointment

Using the VAS, with the score of 10 cm corresponding to being extremely inconvenienced, the mean VAS score was 5.95 ± 2.74 while the highest percentage of the respondents (87; 22.5%) were moderately inconvenienced while 68 (17.6%) were extremely inconvenienced [Table 4].

Table 1: Sociodemographic characteristics of the study population (n=387)

Sociodemographic characteristics	Frequency (%)
Age group (years)	
≤20	100 (25.8)
21-30	97 (25.1)
31-40	74 (19.1)
41-50	58 (15.0)
>50	58 (15.0)
Gender	
Male	166 (42.9)
Female	221 (57.1)
Marital status	
Single	192 (49.6)
Married	195 (50.4)
Ethnic group	
Yoruba	247 (63.8)
Hausa	6 (1.5)
Igbo	68 (17.6)
Others	66 (17.1)
Occupation	
Students	130 (33.6)
Business/artisan	127 (32.8)
Civil servant/professional	112 (28.9)
Retired	18 (4.7)
Religion	
Christianity	321 (82.9)
Islam	66 (17.1)
Highest educational qualification	
None	7 (1.8)
Primary	41 (10.6)
Secondary	95 (24.5)
Tertiary	244 (63.0)
Income (Naira)	
<20,000	162 (41.9)
20,000-50,000	42 (10.9)
50,000-100,000	67 (17.3)
100,000-200,000	55 (14.2)
Above 200,000	61 (15.8)
Regularity of dental checkup	
None	209 (54.0)
6 monthly	83 (21.4)
Yearly	49 (12.7)
Less than yearly	46 (11.9)
Total	387 (100)

Table 2: Reasons for treatment scheduled appointment

Treatment [#]	Frequency (%)
Extraction	114 (29.5)
Fillings	71 (18.3)
Root canal therapy	34 (8.8)
Denture	36 (9.3)
Scaling and polishing	36 (13.4)
Orthodontics	52 (26.4)

[#]Multiple response

Table 3: Appointment duration and patients' self-care practices during waiting period

Appointment waiting period.	Frequency (%)
How long patients waited before dental treatment (hours)	
<1	24 (6.2)
1	184 (47.5)
2	87 (22.5)
3	41 (10.6)
4	28 (7.2)
5	6 (1.6)
Above 5	17 (4.4)
How long respondents waited for the dental appointment (months)	
1	175 (45.2)
2-3	99 (25.6)
4-6	54 (14.0)
>6	59 (15.2)
While waiting for appointment, what respondents did	
Did nothing	210 (54.3)
Went to the chemist	33 (8.5)
Self-medication	42 (10.9)
Used acid	4 (1.0)
Use herbal concoction	11 (2.8)
Use warm water and salt therapy	66 (17.1)
Attended private clinic	21 (5.4)

Table 4: Feeling of individuals after being given an appointment

VAS scores	Frequency (%)
1	29 (7.5)
2	17 (4.4)
3	29 (7.5)
4	31 (8.0)
5	87 (22.5)
6	40 (10.3)
7	40 (10.3)
8	22 (5.7)
9	24 (6.2)
10	68 (17.6)
Mean±SD	5.95±2.74

VAS: Visual analog scale; SD: Standard deviation

Oral health-related quality of life of the study participants at baseline

The highest OHRQOL scores were observed in the subdomains of pain (1.67 ± 0.42), discomfort on chewing (1.41 ± 0.11), self-consciousness (1.50 ± 0.12), and pronouncing words (1.25 ± 0.09). At least 77 (19.9%) of the individuals reported high impacts on their quality of life in these subdomains. The highest mean (standard deviation [SD]) impact score (1.67 ± 1.12) was observed in the subdomain of painful aching

in the mouth. The least mean (SD) impact was recorded in the domain of total inability to function (0.77 ± 0.50) [Table 5].

Oral health-related quality of life of the study participants on the treatment appointment day

On the treatment appointment day, the highest mean impact score (2.27 ± 1.80) was observed in the subdomain of painful aching in the mouth. There was an increase in the OHIP-14 scores in all domains at the review, especially in painful aching of the mouth (0.60 ± 0.30). Eighty-nine (23%) of the individuals reported high impacts on their quality of life in these subdomains [Table 6].

Association between the oral health-related quality of life of the individuals on their appointment day and their sociodemographic variables

Association between the overall mean (SD) OHIP-14 scores and age group and occupation was statistically significant ($P < 0.05$). Individuals aged between 21 and 30 years (19.45 ± 10.3 ; $P = 0.019^*$) and students (19.00 ± 9.5 ; $P = 0.034^*$) had significantly higher mean (SD) impact scores. Association between the sociodemographic variables of the individuals and their mean (SD) OHIP-14 scores was however not significant in any of the other categories explored even though females (19.77 ± 11.4 ; $P = 0.320$), tertiary educated respondents (17.74 ± 10.2 ; $P = 0.510$), those that earned <20,000 naira monthly (18.60 ± 13.2 ; $P = 0.100$), and single respondents (19.72 ± 9.3 ; $P = 0.631$) had higher impact scores than their counterparts [Table 7].

Association between the oral health-related quality of life of the individuals on their appointment day and their clinical characteristics

Individuals who were scheduled for tooth extraction had higher overall mean (SD) OHIP-14 impact scores (20.29 ± 14.0) than individuals scheduled for other procedures. Similarly, individuals that waited for over 5 h (18.53 ± 14.8), those that had appointments longer than 6 months (19.17 ± 10.5), and those that resorted to self-medication (21.66 ± 12.2) also had higher mean impact scores than other individuals [Table 8].

DISCUSSION

It has been observed that the greatest contribution of dentistry is in the improvement of quality of life^[14] because most oral diseases and their consequences interfere with, or have impacts on, daily life performances. There was a low level of attrition among the study participants possibly attributable to the low fees charged by the teaching hospital that has a subsidized payment plan and also to the central location of the hospital in Lagos Metropolis. The highest percentage of study participants were below 20 years of age, and this may not be surprising since about 66% of the participants were scheduled for procedures which are to mainly to treat the sequelae of dental caries (root canal therapy, extractions, and fillings). The highest demand for treatment for dental caries and orthodontic treatment is most common within this age bracket.

A history of dental visits based on symptoms is thus observed among majority of the individuals. More

Table 5: Oral health-related quality of life of the study participants at baseline

OHIP domains	OHIP-14 subdomains	Low impact band 0, 1, and 2	High impact band 3 and 4	Mean OHIP-14 impact score
Functional limitation	Problem pronouncing word	310 (80.1)	77 (19.9)	1.25±0.09
	Felt sense of taste worsen	334 (86.3)	53 (13.7)	1.10±0.07
Physical pain	Painful aching in mouth	285 (73.6)	102 (26.4)	1.67±0.42
	Found it uncomfortable to eat any food	312 (80.6)	75 (19.4)	1.41±0.11
Psychological discomfort	Been self-conscious	290 (74.9)	97 (25.1)	1.50±0.12
	Felt tense	338 (87.3)	49 (12.7)	1.19±0.09
Physical disability	Diet being unsatisfactory	356 (91.9)	31 (8.1)	1.12±0.08
	Interrupt meal	347 (89.6)	40 (10.4)	1.15±0.08
Psychological disability	Find it difficult to relax	347 (89.6)	40 (10.4)	1.10±0.07
	Been bit embarrassed	348 (89.9)	39 (10.1)	1.15±0.09
Social disability	Been bit irritable	346 (89.4)	41 (10.6)	1.15±0.07
	Difficult doing your job	359 (92.8)	28 (7.2)	1.09±0.07
Handicap	Felt life was generally less satisfying	363 (93.7)	24 (6.3)	1.07±0.08
	Totally unable to function	381 (98.4)	6 (1.6)	0.77±0.05

OHIP: Oral health impact profile

Table 6: Oral health-related quality of life of the study participants on the treatment appointment day

OHIP domains	OHIP-14 subdomains	Low impact*, n (%)	High impact#, n (%)	Mean OHIP-14 impact score	Difference: Baseline/ appointment day
Functional limitation	Problem pronouncing word	298 (77.0)	89 (23.0)	1.49	0.24±0.02
	Felt sense of taste worsen	326 (84.2)	61 (15.8)	1.23	0.13±0.01
Physical pain	Painful aching in mouth	202 (52.2)	185 (47.8)	2.27	0.60±0.04
	Found it uncomfortable to eat any food	298 (77.0)	89 (23.0)	1.61	0.20±0.02
Psychological discomfort	Been self-conscious	273 (70.5)	114 (29.5)	1.67	0.17±0.01
	Felt tense	333 (86.0)	54 (14.0)	1.28	0.09±0.01
Physical disability	Diet being unsatisfactory	343 (88.6)	44 (11.4)	1.34	0.22±0.02
	Interrupt meal	343 (88.6)	44 (11.4)	1.19	0.04±0.01
Psychological disability	Find it difficult to relax	345 (89.1)	42 (10.9)	1.19	0.09±0.01
	Been bit embarrassed	339 (87.6)	48 (12.4)	1.26	0.11±0.01
Social disability	Been bit irritable	338 (87.3)	49 (12.5)	1.20	0.05±0.01
	Difficult doing your job	353 (91.2)	34 (8.8)	1.14	0.05±0.01
Handicap	Felt life was generally less satisfying	359 (92.8)	28 (7.2)	1.16	0.09±0.01
	Totally unable to function	379 (97.9)	8 (2.1)	0.79	0.02±0.01

*Band 0, 1 and 2; #Band 3 and 4. OHIP: Oral health impact profile

Table 7: Association between the oral health-related quality of life of the individuals on their appointment day and their sociodemographic variables

Sociodemographic characteristics	Low impact, n (%)	Moderate impact, n (%)	OHIP impact score, mean±SD	P
Age group (years)				
≤20	52 (52.0)	48 (48.0)	17.29±9.1	0.019*
21-30	48 (49.5)	49 (50.5)	19.45±10.3	
31-40	39 (52.7)	35 (47.3)	17.77±10.2	
41-50	34 (58.6)	24 (41.4)	17.12±11.8	
>50	42 (72.4)	16 (27.6)	13.76±8.6	
Gender				
Male	80 (48.3)	86 (51.7)	18.15±9.6	0.320
Female	103 (46.8)	118 (53.2)	19.77±11.4	
Marital status				
Single	91 (47.5)	101 (52.5)	19.72±9.3	0.631
Married	105 (53.6)	90 (46.4)	16.96±10.4	
Occupation				
Students	62 (47.7)	68 (52.3)	19.00±9.5	0.034*
Business/artisan	81 (63.8)	46 (36.2)	16.24±11.2	
Civil servant/professional	59 (52.7)	53 (47.3)	17.49±9.7	
Retired	13 (72.2)	5 (27.8)	12.83±6.2	
Highest educational qualification				
None	5 (71.4)	2 (28.6)	12.43±10.5	0.510
Primary	20 (48.8)	21 (51.2)	16.56±10.4	
Secondary	58 (61.1)	37 (38.9)	17.12±9.6	
Tertiary	132 (54.1)	112 (45.8)	17.74±10.2	
Income				
<20,000	81 (50.0)	81 (50.0)	18.60±13.2	0.100
20,000-50,000	30 (71.4)	12 (28.6)	13.83±10.1	
50,000-100,000	40 (59.7)	2 (40.3)	18.31±9.3	
100,000-200,000	28 (50.9)	27 (49.1)	17.56±9.2	
Above 200,000	36 (59.0)	25 (41.0)	6.04±8.39	

*Significant. OHIP: Oral health impact profile; SD: Standard deviation

than half of the individuals had never had a dental visit and only a few had regular dental checkup. This was in agreement with other researchers that showed that despite the high need for dental treatment,

dental service use continues to remain low and is often prompted by oral symptoms such as pain and the need for curative treatment.^[15] This indicates that there is a high level of unmet dental needs among

Table 8: Association between the oral health-related quality of life of the individuals and delay in dental appointment

Clinical characteristics	Frequency	Low impact, n (%)	Moderate impact, n (%)	OHIP impact score, mean±SD	P
Treatment (multiple response)					
Extraction	114	55 (48.2)	59 (51.8)	20.29±14.0	0.046*
Fillings	71	33 (46.5)	38 (53.5)	20.11±12.8	
Root canal therapy	34	18 (52.9)	16 (47.1)	18.84±9.5	
Denture	36	18 (50.0)	18 (50.0)	18.46±8.6	
Scaling and polishing	52	38 (73.1)	14 (26.9)	13.46±9.6	
Orthodontics	102	64 (62.7)	38 (37.3)	15.62±9.4	
How long patients waited before dentist attend (h)					
<1	24	16 (66.7)	8 (33.3)	16.75±9.9	0.416
1	184	94 (51.1)	90 (48.9)	18.19±9.5	
2	87	56 (64.4)	31 (35.6)	15.81±9.7	
3	41	22 (53.7)	19 (46.3)	16.71±10.2	
4	28	16 (57.1)	12 (46.9)	16.33±10.9	
5	6	3 (50.0)	3 (50.0)	17.74±9.8	
Above 5	17	8 (47.1)	9 (52.9)	18.53±14.8	
How long respondents has waited for the appointment (months)					
1	175	98 (56.0)	77 (44.0)	16.86±10.6	0.312
2-3	99	61 (61.6)	38 (38.4)	17.00±9.5	
4-6	54	25 (46.3)	29 (53.7)	17.22±9.2	
>6	59	31 (52.5)	28 (47.5)	19.17±10.5	
While waiting for appointment, what respondents did					
Did nothing	210	126 (60.0)	84 (40.0)	16.05±10.1	0.234
Went to the chemist	33	17 (51.5)	16 (48.5)	18.33±9.8	
Self-medication	42	19 (45.2)	23 (54.8)	21.66±12.2	
Used acid	4	3 (75.0)	1 (25.0)	12.50±7.3	
Use herbal concoction	11	3 (27.3)	8 (72.7)	21.45±7.6	
Use of warm water and salt	66	35 (53.0)	31 (47.0)	17.92±8.8	
Attended private clinic	21	12 (57.1)	9 (42.9)	17.52±9.0	

*OHIP: Oral health impact profile; SD: Standard deviation

the individuals and highlights the importance of preventive interventions and oral health promotion to reverse this pattern.

During the first visit, close to half of patients were seen within the 1st h that they arrived at the dental clinic though some had to wait for about 5 h before being attended to. Similarly, over 40% of the study participants were moderately to severely inconvenience by the duration of appointment that they were given. Nigeria has been identified as having a critical shortage of health care personnel, which is worse in the oral health sector, while the oral health facilities available are inadequate to meet the needs of the people.^[16,17] Limited access to oral health services is a factor that contributes to the high prevalence of oral diseases in Africa.^[18] Most public oral health facilities utilize appointment systems due to the volume of patients seen and also due to administrative inefficiencies in their systems. This limited access to oral health care in developing countries can be greatly

improved by integrating oral health into the primary health care (PHC) system.^[18]

The study participants reported negative impacts on their OHRQOL in all subdomains at baseline. The highest mean impact score was observed in the subdomain of painful aching in the mouth. On the treatment appointment day, increases in all OHRQOL subdomains were observed, especially in that of painful aching in the mouth. The highest OHRQOL scores were observed in the subdomains of pain, discomfort on chewing, self-consciousness, and pronouncing words. More than 23% of the individuals reported high impacts on their quality of life in these subdomains. There was an increase in the overall and all sub-domain OHIP-14 scores in the individuals. The highest increase in the scores was observed in the subdomain of painful aching in the mouth. Toothache is frequently caused by dental caries and associated with poor oral health. Even though most dental diseases are not associated with mortality,

they have an unfavorable consequence on usual social roles, self-esteem, nutrition, communication, interpersonal relations, employment, and general health.^[19-21] Delay in accessing dental treatment due to prolonged appointment may also further worsen a patient's OHRQOL while prompt dental treatment may help to restore physical and social function and self-esteem.^[22]

Respondents aged between 21 and 30 years and students had the highest mean impact scores. Some researchers^[23] have observed that young patients report the worst OHRQOL, especially those with low education.^[24] Conversely, another author reported worse OHRQOL in elderly patients with poor oral health, especially those that do not use dental services on a regular basis.^[25] In the present study, females reported more impacts on their OHRQOL than males as previously documented.^[23] Women care more about their health and their appearance and are also more communicative in relating their symptoms; this could explain the higher impact scores recorded by them.^[26]

Individuals who were scheduled for tooth extraction and fillings had statistically significantly higher overall mean OHIP-14 impact scores than patients on appointment for other types of treatment. Extraction and filling of teeth are the most common procedures performed in dental clinics, and it is mainly indicated for the painful sequelae of dental caries and periodontal disease. Individuals that required dentures fabrication also had high OHRQOL scores. Some researchers have observed that age, number of teeth, and cultural upbringing were important variables influencing OHRQOL.^[27] Other authors demonstrated a weak positive correlation between the number of missing teeth or denture wearing and OHRQOL.^[28]

Respondents that waited for over 5 h, those that had appointments longer than 6 months, and those that resorted to self-medication had higher mean impact scores than others. There is a threshold capacity in outpatient clinics where service supply equals demand, and an infinite queue is eventually formed when demand exceeds service supply. Gupta and Denton^[29] distinguished between a direct waiting time that the patient experiences while waiting in the clinic and an indirect waiting time which is the sequence between appointment booking and receiving treatment. These waiting times can have a direct bearing on the patient's quality of life as observed in this study. Evidence also shows that patients that are satisfied

with dental treatment have positive experiences and tend to seek preventive dental care and hence have good oral health. In contrast, patients that have had negative experiences tend to avoid dental care.^[30,31]

Our results have direct public health and service implications for oral health because most patients in Nigeria access oral health services from public facilities which utilize appointment systems to manage patient burden. Some of these facilities are however inefficiently managed due to infrastructural deficits and inadequate dental material supplies that result in prolonged and failed appointments. Since these deficiencies may have a direct bearing on OHRQOL of patients, it may be appropriate to ensure that quality control standards on dental appointments are established and enforced. This study however does not make conclusive causal inferences due to its descriptive nature but provides a basis for further exploratory studies.

CONCLUSION

The study participants reported negative impacts on their OHRQOL in all subdomains at baseline. On the treatment appointment day, increases in all OHRQOL subdomains were observed, especially in that of painful aching in the mouth. Individuals that waited for over 5 h, those that had appointments longer than 6 months, and those that resorted to self-medication had higher mean impact scores than others. Since the appointment systems in public oral health facilities are associated with some deficiencies that may have a direct bearing on OHRQOL of patients, it may be appropriate to ensure that quality control standards on dental appointments are established and enforced.

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Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or non-financial in this article.

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