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Utilization of Dental Services by Rural dwellers: Case of two Communities hosting a tertiary health facility

C. Chamberlain Joseph¹, E. Abigail Akaji²¹ Department of Preventive Dentistry, Faculty of Dentistry, University of Nigeria² Department of Preventive Dentistry, Faculty of Dentistry, University of Nigeria/UNTH, Enugu, Nigeria

Abstract

Background: Oral diseases have a significant impact on people's appearance, quality of life, and self-esteem, despite the fact that frequent dental visits aid in early identification, and prevention. In the rural areas, people find it difficult to visit dental care for a variety of reasons, and most times access to dental care is blamed for non-use. **Aim:** The aim of this study was to determine the level of dental service utilization in the University of Nigeria Teaching Hospital (UNTH) by inhabitants of the two host communities while highlighting the predisposing factors and barriers to the use of the services. **Methodology:** This descriptive cross-sectional study was conducted in the villages of Ituku and Ozalla hosting the University of Nigeria Teaching Hospital (UNTH) in Enugu State. A minimum sample size of 138 was calculated for each community yielding a total of 276. Information obtained from 69 households (2 per household) using a 21-question semi-structured questionnaire include demographic characteristics, oral health awareness, dental service utilization, and barriers to service utilization. Data analysis was done with SPSS software version 20, and the Chi-square test identified differences between groups with the level of significance set at $p \leq 0.05$. **Results:** The study involved 278 villagers aged 18 to 80 years, 140(50.4 %) were from Ozalla and 138(48.6%) from Ituku Community; 119/138 (86.2%) and 130/140 (92.9%) were aware of a dental clinic respectively. Also, 58/278 (20.9%) of the participants had previously used dental services at UNTH: [22 (37.9%) Ituku and 36 (62.1%) Ozalla ($p=0.045$)], but only 12/58 visited the clinic in the year prior to the study, so the utilization rate was only 20.6%. Scaling and polishing 29/58 (50.0%), and filling 20/58 (34.5%) were the popular treatments/services. The main reasons for seeking care at UNTH were severe pain 41/58 (70.7%) and inability to eat 17/58 (29.3 %). Lack of perceived need was the most prevalent barrier 101 /220 (45.9%) to using dental services, followed by unawareness of a dental clinic in UNTH for 38/220 (17.3%). The Association between awareness of the dental clinic and its utilization shows that it was exclusively among those who were aware ($p < 0.001$). **Conclusion:** There was a very low level of utilization of dental services at the University of Nigeria Teaching Hospital by dwellers of the host communities. However, awareness rather than access or distance to the hospital was key in influencing the visits with pain as the most compelling reason for attendance. Promotion of more platforms for enlightenment by all means with an emphasis on preventive approaches rather than symptom-driven visits is recommended.

Keywords: Rural community, Utilization, Dental Services, Barriers.

INTRODUCTION

Oral health is an important but frequently overlooked facet of overall health, with diseases including dental caries, oral malignancies, and periodontitis becoming major concerns in almost every country^[1]. The World Health Organization (WHO) defines oral health as the absence of chronic mouth and facial pain, oral and throat cancer, oral infections and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's ability to bite, chew, smile, speak, and maintain psychosocial well-being^[2]. Oral diseases have a significant impact on people's appearance, quality of life, and self-esteem, despite the fact that frequent dental visits aid in early identification, prevention, or halting their progression. The number of people in a population who access or use dental care during a given period of time is referred to as dental utilization^[3,4]. People in rural areas find it difficult to access dental care for a variety of reasons, including expense, ignorance, proximity to dental clinics, fear/anxiety, belief, and so on; these limitations have resulted in a widespread increase in dental problems there and elsewhere^[5].

Dental services are typically underutilized in Africa, with the assumption that only the wealthy can afford them^[6]. Several studies conducted have corroborated this: only 11.4 percent of city people in Abidjan, Ivory Coast, had visited a dentist for dental concerns, according to a survey^[7]. Also, a study in Ghana reported that 27 percent of a population with a mean age of 50.9 \pm 18.3 years visited the dentist on a regular basis, while in Lesotho, 14 percent of adolescents did^[8,9]. In Nigeria, despite rising knowledge, there is still a low level of dental service utilization^[10]. While 23.9 percent of a rural population in South-eastern Nigeria attended the dental clinic, just 14.9 percent of secondary school students in Lagos-Nigeria made it^[1,4].

*Corresponding author:

Dr. Ezi Abigail Akaji

Department of Preventive Dentistry, College of Medicine, University of Nigeria, Ituku-Ozalla, Enugu State, Nigeria
Email: ezi.akaji@unn.edu.ng

Because access to dental care is frequently blamed for non-use, this study looked into the experiences of two rural villages [Ituku and Ozalla] that share a tertiary health center. The study is unique in that it took place in a community rather than a hospital, so the study population is community-based rather than hospital-based. Research questions focused on whether the villagers were aware of the presence of a dental clinic in the tertiary hospital within their reach; if so, what was the utilization level, and what additional hurdles kept people from getting the services? Hence, the aim of this study was to determine the level of dental service utilization in UNTH by inhabitants of the hosting communities, as well as the predisposing factors and barriers to doing so.

MATERIALS AND METHOD

Study Area and Study design

This was a descriptive cross-sectional study conducted in the villages of Ituku and Ozalla in Enugu State which is made of up seventeen (17) Local Government Areas (LGA). An LGA is a geographic unit with defined administrative and political structure; Ituku is located in Awgu LGA, while Ozalla is in Nkanu West LGA. Both LGAs alongside 12 others make up the rural areas in the state. The University of Nigeria Teaching Hospital (UNTH) is a tertiary healthcare institution situated on the border between the villages of Ituku and Ozalla along Enugu – Port Harcourt Express Road; both villages are reported to have donated land for the hospital, hence the name UNTH, Ituku-Ozalla [Figure 1]. The hospital is one of the three major public hospitals in Enugu State, and has the sole known dental facility in the Ituku and Ozalla zones as of October and December 2020, when data was collected.

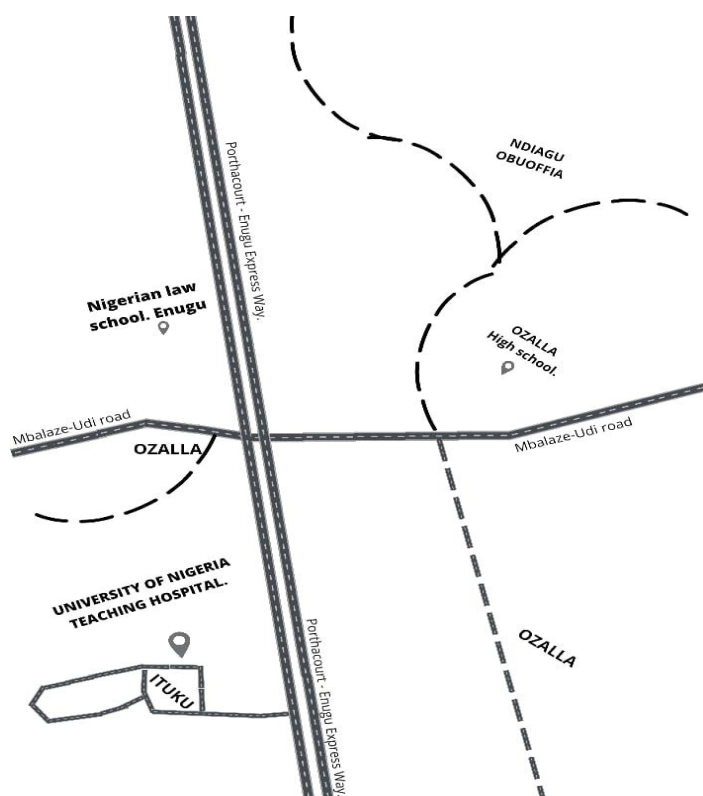


Figure 1: Location of UNTH, Ituku-Ozalla

Study Protocol

The Ethical Committee of the University of Nigeria Teaching Hospital provided an ethical clearance certificate. The community leaders in Ituku and Ozalla gave their permission. The inhabitants were given explanations about the study's focus, data collection process, and voluntary nature of participation; consent was obtained from each participant thereafter.

Sample selection, data collection, and analysis

Using a sample size calculation for descriptive studies (Z^2pq / e^2)^[11], a minimum sample size of 138 was estimated for each host community, based on a prior study's 10 percent prevalence of dental care utilization^[5], yielding a total minimum sample size of 276. To make up 276 people, two people (permanent residents, not visitors) were chosen from 69 households in each of the community. The tool for data collection was a 21-question semi-structured questionnaire [Appendix 1], comprising 7 questions (demographic characteristics), 4 questions (oral health awareness), 7 questions (dental service utilization), and 3 questions (barriers to service utilization).

Statistical Analysis

The statistical package for social sciences (SPSS) software [version 20 SPSS Inc. Chicago IL] was used to enter and analyze the data. Categorical variables were described using frequencies and percentages. Pearson Chi-square test was used to identify statistically significant differences between groups with the level of significance set at $p \leq 0.05$.

RESULTS

The study included 278 community dwellers aged 18 to 80 years [mean 37.21 ± 15.09]; 140 (50.4%) were from Ozalla and 138 (48.6%) from Ituku Community, table 1. Only 82/138 (59.4%) in the Ituku Community recognized who a dentist was, despite the fact that 119/138 (86.2%) were aware of the existence of a dental clinic at the UNTH; for Ozalla we had 131/140 (93.6%) and 130/140 (92.9%) respectively. Family members were the primary source of information for Ituku 48/119 (40.3%) and Ozalla 50/131 (38.2%), whereas medical outreaches informed 14/119 (11.8%) and 29/131 (22.1%) respectively, table 2.

Table 3 shows that 58/278 (20.9%) of the participants had previously used dental services at UNTH: 22 (37.9%) from Ituku and 36 (62.1%) from Ozalla ($p=0.045$). Table 4 shows that females in the 30–39 year age group and singles were more likely to use dental services than their male and married counterparts, although the differences were not statistically significant ($p>0.05$). Only 12 people out of 58 visited the dental clinic in the year prior to the study, so the utilization rate was only 20.6 percent, and 28/58 (48.3 percent) couldn't remember when they last went. Scaling and polishing 29/58 (50.0%), extraction 28/58 (48.3%) and filling 20/58 (34.5%) were the most popular treatments/services. The main reasons participants dental care at UNTH were severe pain 41/58 (70.7%) and inability to eat 17/58 (29.3 %).

Table 5 shows that the most prevalent barriers to using dental services were a lack of perceived need for 101/220 (45.9%) participants, not knowing of a dental clinic in UNTH for 38/220 (17.3%), and cost of service for 28/220 (12.7%). There was a significant relationship between awareness of the dental clinic and its utilization ($p < 0.001$) in the analysis of the two variables, and utilization was exclusively among those who were aware, table 6.

DISCUSSION

Dental services are a vital component of health care, yet they are also one of the least used^[12]. The goal of this study was to determine the level of use, the predisposing factors and barriers preventing permanent inhabitants of the villages hosting the hospital (Ituku and Ozalla) from using dental services at the University of Nigeria Teaching Hospital (UNTH). A large percentage of participants were aware of who a dentist is and that UNTH has a dental clinic; "awareness" is a factor that has been proven to impact the utilization of services in the past^[12,13]. Family and friends were the primary sources of information about a dental clinic in this study, and are known to be major influencers in the use of dental services^[14]. Medical outreach in conjunction with the media also contributed to this understanding, correlating with earlier outreach-based studies^[13,15].

Table 1: Demographic Characteristics of the Participants

Variables	Frequency	Percentage	M±SD
Age (in years)			37.21±15.09
10 -19	30	10.8	
20-29	64	23.0	
30-39	73	26.3	
40-49	57	20.5	
50-59	2	9.0	
≥ 60	29	10.4	
Gender			
Male	106	38.1	
Female	172	61.9	
Marital Status			
Single	115	41.4	
Married	144	51.8	
Widow	19	6.9	
Educational Status			
Primary	23	8.3	
Secondary	177	63.7	
Tertiary	73	26.3	
No formal education	5	1.8	
Occupation			
Students	59	21.2	
Artisans and Farmers	159	57.2	
Professionals and Clergies	46	16.5	
Retired	14	5.0	
Community			
Ituku	138	49.6	
Ozalla	140	50.4	

Table 2: Awareness about Dentistry and Dental Services in UNTH

Variables	Communities	
	ITUKU	OZALLA
Awareness of a dentist (n =278)	(n =138)	(n = 140)
Yes	119(86.2)	131 (93.6)
No	19 (13.8)	9 (6.4)
First source of information	(n =119)	(n = 131)
Through a friend	25 (21.0)	34 (25.9)
Family members	48 (40.3)	50 (38.2)
Mass media	17 (14.3)	10 (7.6)
Medical outreach	14 (11.8)	29 (22.1)
Others: education, health practitioner	15 (12.6)	8 (6.1)
Awareness of dental unit in UNTH	(n =138)	(n = 140)
Yes	82 (59.4)	130 (92.9)
No	56 (40.6)	10 (7.1)
Known dental service(s) available in UNTH(n = 212)*		
Filling	38 (35.2)	55 (52.9)
Extraction	87 (80.6)	99 (95.2)
Root canal treatment	11(10.2)	20 (19.2)
Braces/orthodontic appliance	3 (2.8)	13(12.5)

Scaling and polishing	22(20.4)	40 (38.5)
Artificial teeth	8(7.4)	21 (20.2)

*More than one answer was proffered

Table 3: Utilization of dental services in UNTH by Study participants

Utilization	For all study participants			
	n	%		
Yes	58	20.9		
No	220	79.1		
Total	278	100		
According to Community				
	Ituku	Ozalla	Chi-square	p-value
	n (%)	n (%)		
Yes	22 (15.9)	36 (25.7)	4.020	.045
No	116(84.1)	104(74.3)		
Total	138	140		

Table 4: Dental service utilization according to other demographic variables

Utilization of Dental Service in UNTH						
		Yes (58)	No (220)	Total	Chi-Square	p-value
Gender					0.132	0.71
-	Male	21(36.2)	85(38.6)	106		
-	Female	37(63.8)	135(61.4)	172		
Age					11.502	0.07
-	10-19	3(5.2)	27(12.3)	30		
-	20-29	14(24.1)	50(22.7)	64		
-	30-39	24(41.4)	49(22.3)	73		
-	40-49	9(15.5)	48(21.8)	57		
-	50-59	4(6.9)	22(10.0)	26		
-	≥60	4(6.9)	24(10.9)	28		
Marital Status					2.193	0.33
-	Single	29(50.0)	86(39.1)	115		
-	Married	26(44.8)	118(53.6)	144		
-	Widow	3(5.2)	16(7.3)	19		

Table 5: Reasons and Barriers to Utilization of Dental Services in UNTH

	Frequency	Percent
Last dental visit (n = 58)		
≤1 year	12	20.6
2 years	6	10.3
≥3 years	12	20.7
Can't remember	28	48.3
Dental services utilized / received (n = 58)*		
Filling	20	34.5
Extraction	28	48.3
Root canal treatment	8	13.8
Braces/orthodontic appliance	3	5.2
Scaling and polishing	29	50.0
Artificial teeth	1	1.7
Reasons for utilizing dental care (n = 58)*		

Could not eat well	17	29.3
Serious pain	41	70.7
Shaking teeth	4	6.9
Persistent pain post medication	4	6.9
Smelly mouth	2	3.4
Others- teeth arrangement, hole in teeth, unclean teeth, routine clean-up	9	15.5
Most prominent reason/barrier to accessing the dental services in UNTH (n = 220)		
Cost of treatment	28	12.7
Don't see the need	101	45.9
Unaware of any dental service in UNTH	38	17.3
Waiting time	20	9.1
Distance	6	2.7
Attitude of the staff	10	4.5
No time	10	4.5
Fear of Dental treatments	7	3.2

Table 6: Relationship between Awareness and Utilization of Dental Services in UNTH

	Utilization of Dental Service		Total	Chi-Square	p-value
	Yes	No			
Awareness				22.817	0.001
- Yes	58(27.4)	154(72.6)	212		
- No	0(0.0)	66(100.0)	66		

Generally, there was a very low level of utilization of dental services by participants, a finding consistent with those from other Nigerian studies: 20.6% in Ibadan [12], 22.6% in Port-Harcourt [16], 10.8% among adults in Lagos [5], 14.7% (among school children) and 23.9% (among adults) in Enugu [1,17]. In contrast, according to a survey from Saudi Arabia, 72.7 percent of students in both private and public colleges visited the clinic more than once in the two years before the study [14]. When the use rate was compared by village in our study, it was shown that Ozalla residents attended the clinic more than Ituku residents ($p < 0.05$). UNTH is on the outskirts of both host villages and is around the same distance from their centers, thus it is safe to conclude that neither location nor distance would be an impediment to dental appointments. The differential seen could be linked to the fact that the former had more outreaches, which encouraged awareness and, as a result, increased visits to the dental clinic [13,15]. This is supported by the fact that there was a substantial link between dental service awareness and utilization in UNTH ($p < 0.001$), with the latter occurring exclusively among those who were aware.

Females, those in 30-39 year age group attended the dental clinic more than their counterparts; although the correlations were not statistically significant, it could be concluded that patterns of service utilization in UNTH have not changed substantially since an audit conducted a decade ago [18]. More impediments to a dental visit were blamed for the lower odds for usage by the older cohorts [5,19]. Scaling/polishing was the most common treatments given to participants in our study, and pain was the most compelling reason for a dental visit, validating past studies [1,4,12,13,16,20-22]. Kim *et al.* discovered that those with dental pain were 2.53 times more likely than those without dental pain to attend dental clinics [23]. Despite reports of more restorative procedures and tooth extractions in the literature [20,24], a preventive approach rather than a symptom-driven dental visit is recommended because it reduces the prevalence and severity of oral diseases, reduces partial or total tooth loss, and improves quality of life [5, 20].

Furthermore, lack of perceived need and unawareness were the most important factors in preventing visits to the dental clinic, followed by

cost, with distance to the hospital being the least important factor in the current study. Lack of perceived need has been identified as a common factor among non-users of dental services in Nigeria [12,16,22], but a compilation of Indian studies identified anxiety, educational level, and time as major factors [25]. While the current study did not look into the association between educational level and other factors like occupation and the usage of dental services, the impact of anxiety or fear of dental procedures was minimal here. Regular visits to the dentist help uncover deviations from a healthy oral cavity and lower the burden of untreated diseases. Hence, the public health implications are that unnecessary pain and infections would be avoided leading to reduction of the number of schoolchildren missing lessons while boosting the productivity of workers [26]. This emphasizes the importance of raising knowledge about preventive oral care while de-emphasizing symptom-driven dental visit to bridge these gaps.

In terms of the study's limitations, recall bias may have influenced self-reported dental service utilization although, this was mitigated by asking specific questions that corresponded to and confirmed activities that occurred during that dental visit (like extraction, scaling, etc.). Also, the descriptive character of our study necessitates caution in interpreting the results, however, it rides on the strength of having a balanced representation of study cohorts drawn from both populations' households.

CONCLUSION

Dental Services at the University of Nigeria Teaching Hospital were underutilized by the host communities. Ozalla residents, the younger age and females were the ones who came to the clinic the most, but their visits were frequently symptom-driven. The commonest barriers to using services were lack of awareness and perceived need. Programs that raise awareness and encourage routine or preventive dental checkups are highly recommended. These would improve utilization of the dental services, participants' oral health quality of life and give a better clientele for the hospital.

Authors' contributions

CCJ: Conception of the study, Study Protocols, Literature search and Data Collection. EAA: Study design, Literature search, Data analysis and Manuscript writing.

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Conflict of interest

The authors declare that there is no conflict of interest.

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APPENDIX 1

QUESTIONNAIRE

UTILIZATION OF DENTAL SERVICES IN UNIVERSITY OF NIGERIA TEACHING HOSPITAL: CASE OF TWO HOST COMMUNITIES HOSTING A TERTIARY HEALTH FACILITY.

Information and consent form

Dear respondents,

We are conducting research on the utilization of dental services in University of Nigeria Teaching Hospital by the dwellers of Ituku and Ozalla.

Your cooperation in completing this questionnaire will be highly appreciated. Your participation in this study is voluntary which means you have the right to decline to participate. Please read each question carefully before answering. Kindly answer all questions sincerely as your responses will be treated with strict confidentiality. Thank you.

Please tick

SECTION A: SOCIO-DEMOGRAPHY

1. Age (in years)
10 – 19 [] 20 – 29 [] 30 – 39 [] 40 – 49 []
50 – 59 [] 60 – 69 [] 70 – 79 []
2. Gender: Male [] Female []
3. Occupation:
4. Marital status: Single [] Married [] Widowed []
5. Religion: Christianity [] Islam [] Traditional []
Others (specify).....
6. Tribe: Igbo [] Hausa [] Yoruba [] Others (specify).....
7. Educational status: Primary [] Secondary [] Tertiary []

SECTION B: DENTAL SERVICE AWARENESS

8. Do you know about Dentists? Yes [] No []
9. If yes, how did you know?
 - a. Through a friend [] d. Medical outreach
 - b. Parents and family members [] e. Others (specify).....
 - c. Mass media []
10. **Do you know that there is a Dental unit in University of Nigeria Teaching Hospital (UNTH)?**
Yes [] No []
11. **If yes to the above, what dental services do you know are available in UNTH? (Multiple answers allowed)**
 - a. Filling [] e. Scaling and polishing []
 - b. Extraction [] f. Artificial teeth []
 - c. Root canal treatment [] g. Others (specify).....
 - d. Braces/orthodontic appliance []

SECTION C: UTILIZATION OF DENTAL SERVICES

12. Have you ever used dental service from UNTH?

Yes [] No []

13. **If yes to the above, which dental service did you utilize? (Multiple answers allowed)**

- a. Filling []
- b. Extraction []
- c. Root canal treatment []
- d. Braces/orthodontic appliance []
- e. Scaling and polishing []
- f. Artificial teeth []
- g. Others (specify).....

14. **Why did you decide to receive dental care? (Multiple answers allowed)**

- a. I couldn't eat well []
- b. I was in serious pain []
- c. My teeth were shaking []
- d. My mouth was swollen []
- e. The drugs I took did not stop the pain []
- f. My mouth was smelling []
- g. Others (specify).....

15. **How often do you go to UNTH to utilize a dental service?**

- a. Regular 6 monthly checkup []
- b. Once a year []
- c. Only when I have toothache []
- d. To clean my teeth []
- e. Whenever I have any dental problem []
- f. I have not gone before []
- g. Others (specify) -----

16. **When last did you go to the dental unit in UNTH? Months [] Years []**

17. **What dental problem took you to UNTH? (Multiple answers allowed)**

- a. Toothache []
- b. Routine checkup []
- c. Bad breath []
- d. Came for cleaning []
- e. Swollen mouth []
- f. Bleeding gum []
- g. Shaking teeth []
- h. Whole in tooth []
- i. Others (specify).....

18. **Where do you normally receive dental care?**

- a. UNTH Dental unit []
- b. Traditional healer []
- c. Home treatment []
- d. Pharmacy []
- e. Patent medicine dealer []
- f. Others (specify).....

SECTION D: BARRIERS TO ACCESSING UNTH DENTAL SERVICES

19. **Do you go to UNTH for dental treatment? Yes [] No []**

20. **If your answer to the above question is no, what is your reason?**

- a. The cost is too much []
- b. I don't see the need []
- c. Am not aware of any dental service in UNTH []
- d. They take too much time before seeing patients []
- e. I am afraid of dental treatments []
- f. I don't like the attitude of the staff []

g. They don't have enough qualified staffs to treat me []

h. The distance is far []

i. I don't have time []

j. Others (specify).....

21. What do you think should be done to tackle the issue raised in no. 20 above?.....