Determinants and Inequities in the Utilization of Routine Oral Health Care Services in Southeast Nigeria.

Nkoli Uguru[1], Benjamin Uzochukwu[2] , Chibuzo Uguru[3], Obinna Onwujekwe[4]

[1]*Department of Preventive Dentistry, College of Medicine University of Nigeria Enugu Campus. Enugu Nigeria*
[2]*Department of Community Medicine, College of Medicine University of Nigeria Enugu Campus. Enugu Nigeria*
[3]*Department of Oral and Maxillofacial surgery, College of Medicine University of Nigeria Enugu Campus. Enugu Nigeria*
[4]*Department of Health Administration and Management, College of Medicine University of Nigeria Enugu campus. Enugu Nigeria*

Abstract
Introduction: *In many developing countries, equitable access to and utilization of appropriate oral health services remains a major problem. This study provides information on inequities, determinants and barriers of utilization of routine dental services in Nigeria.*
Method: *This was aquantitative cross-sectional study undertaken in Enugu State, southeast Nigeria. An interviewer administered questionnaire was used to obtain responses from 329 patients from two dental clinics. A systematic sampling technique was used to select the respondents from the sample frame, where every 3rd patient starting from the first patient that attended the dental clinic during the period of data collection was interviewed. Analysis was done using cross-tabulations and multiple regression analysis. A socio-economic status (SES) index was created, divided into quintiles (Q1 to Q5) and used to examine the occurrence of inequities in some of the key variables.*
Results: *Majority of the respondents (72%) visited a dental clinic only when they had a tooth ache. The next common cause of dental visit was when clients had an obvious cavity in one or more teeth (36%). The average cost of treatment per case was 4,274.26 Naira (28.49 USD). With no difference in cost by SES.Attendance at clinics for routine checkup was higher in SES groups Q4 and Q5. Regression analysis shows that a highlevel of education, perceived severity of the problem and experience of dental staff were positively associated with utilization of dental clinic while cost of treatment was negatively associated with utilization.(P<0.05)*
Conclusion: *The major barrier to utilization of routine dental services is cost, affecting mainly the lower SES groups. Although low educational level and poor awareness were important factors. The institution of a comprehensive health insurance package which covers oral diseases as well as increased awareness and integration of preventive dental care at the primary care level will help reduce the cost of dental treatment and also enhance utilization of dental care.*

I.   Introduction

In many African countries, the availability and accessibility of dental health services are seriously constrained, and the provision of essential oral care is limited.[1] The few existing reports from Africa show very low utilization of dental services, and visits to a dental care facility are mostly undertaken for symptomatic reasons.[2,3,4,5]Previous studies show that 37% and 11.4% of respondents respectively, consulted a dentist or medical practitioner, for tooth extractions or dental problems.[3,4]Self-medication with herbal medicines or modern drugs is common practice in many African countries.[6,7]Observations from other studies show that the principal factors associated with the utilization of dental services were distance to a treatment facility and previous dental symptoms.[8]

Utilization of oral health services in Nigeria is low where only 9.0% of households used dental services within one year.[5] Variables such as zone of residence, household educational level and social class ranking affect use of oral care services.[5] Some other contributory factors to low utilization such as poor perception of the importance of oral health and an ignorance of existing services have been observed.[10] To a large extent, utilization of dental services depends on the level of awareness, socio economic and socio demographic status and gender of the patient.[13]

Studies carried out in Nigeria about utilization patterns have shown that regular visits to the dental clinic is not a well-established tradition and the standard measure of appropriate utilization of dental care services was not met. This is evident in the observed utilization patterns of 14.1% and 14.9% among Nigerian students[14,15] and adult utilization pattern of 26%.[12,13]This low utilization pattern could be attributed to the issue of limited health insurance as well as a low dentist per capita ratio of 1:150,000[11]

In combating oral diseases, it is important to have an oral health plan, yet, only 14 out of 46 countries in Africa, have an oral health plan.This has affected planning and delivery of appropriate oral health care to the people.[9]In addition, some studies have postulated that inappropriately trained dentists, services that benefit only the affluent and urban communities, lack of and proper maintenance of equipment,poor availability of materials, supplies, and infrastructure as well as distance of facility to patients have contributed to poor utilization of dental services. [9]

The aim of this study was to determine factors influencing utilization of oral health care, inequities in utilizing oral health care as well as the patient payment coping mechanisms for routine dental treatment in southeast Nigeria.

II. Methodology

This study took place in Enugu State, one of the 36 states of the Federal Republic of Nigeria. Enugu State is divided into 17 Local Government Areas (LGAs); of these, four LGAs;Enugu North, Enugu South, Enugu East and Nsukka largely make up the urban areas while the remaining thirteen constitute the semi urban and rural areas. The state has a population of over 3.8 million with urban population of about 1,032,297, distributed among the four LGAs as follows, 279,089, 244,852, 198,723 and 309,633 respectively. [16]

A cross-sectional study was conducted in two public dental clinics namely Baptist Medical Centre and Federal school of dental technologyboth in Enugu state Nigeria. A multistage sampling method was used and two LGAs were randomly selected from the4 LGAs regarded as urban areas in Enugu State.One clinic each was randomly selected from the two LGA's.The sampling frame for the study was developed from the list of registered patientsin the clinics. The registered patients in both clinics were 2030 from which the sample size was obtained. A systematic sampling technique was used to select participants. Every 3rd patient starting from the first patient that attended the dental clinic during the period of data collection was interviewed until the stipulated sample size of 329 was attained. The two clinics had comparable numbers of registered patients at 980 and 1050 respectively, subsequently a representative number of patients were interviewed from both clinics.

A patient exit interview was conducted with structured questionnaires using an interviewer administered technique. Prior to actual data collection, a pre-test of the questionnaire was carried out. During actual data collection, the pre-tested patient exit questionnaire was administered to patients seen at the dental clinic, and for pediatric (child) patients, the accompanying adults were interviewed .Only patients who had used one form of dental service or the other were included in the study. The patients were interviewed to elicit information on accessibility of dental services, pattern of utilization of the existing services, payment coping mechanisms and respondent's socio-economic status category.

Data were analyzed using STATA and SPSS version 17 statistical software. Analysis was done to determine the utilization patterns of the respondents. A logistic regression analysis was conducted to determine which independent factors influenced utilization of dental care.Equity analysis was done and a socio-economic status (SES) index was used to categorize the households into socio-economic status quintiles: rich, least poor, poor, very poor and most poor. Principal components analysis (PCA) was used to generate the index[18]that was used to investigate the equity implications of the findings. Information on ownership of a radio, refrigerator, motor car, television, iron, electric generator and motorcycle together with the weekly per capita cost of food was used to generate the SES index. Pearson's Chi square test was used to test significance of associations and P value of <0.05 accepted as significant. The ratio ofthelowestSEStothehighestSES(Q1:Q4ratio)was computed as a measure of inequity.

Ethical Clearance

All respondents gave informed consent before proceeding with the interviews. Ethical clearance was obtained from the research ethics committee of the University of Nigeria Teaching Hospital Enugu

III. Results

The average number of people per household was 5 and the respondents were mostly female. Majority of the respondents were married. A total of 45.5% of the respondents had secondary education. The major source of income among the respondents was Government work (35%).(Table 1)

Table 1: Socio-demographic characteristics of respondents

Variables	n (%)(N= 329)
Sex of respondent	
Male	129 (39)
Female	200 (61)
Level of education	
Primary	27 (8.2)
Secondary	147 (44.7)
Tertiary	140 (42.5)
Vocational	15 (4.6)
Household source of income	
Farmer	13 (3.9)
Artisan	62 (18.8)
Government worker	114 (34.6)
Private sector	40 (12.2)
Business	42 (12.8)
Self employed	26 (7.9)
Pensioner	32 (9.7)
SES Distribution	
Q1(most poor)	66 (20.1)
Q2 (very poor)	66 (20.1)
Q3 (poor)	66 (20.1)
Q4 (averagely poor)	66 (20.1)
Q5 (least poor)	65 (19.8)

Utilization of dental services

Majority of the respondents visited the dental clinic only when they had a toothache or an obvious cavity in one or more teeth, and to a lesser extent for a routine checkup or cleaning (Table 2).

Table 2: Patients perception on state of dental clinic and reasons for utilizing dental services

Variables	Total N=329
Perception of services at clinic: n (%)	
Very acceptable	255 (77.5)
Acceptable	69 (21)
Unacceptable	5 (1.5)
Knowledge of Services offered at clinic: *	
Cleaning of teeth:	240 (73)
Filling of teeth:	210 (64)
Extraction of teeth:	282 (86)
Crowns/dentures	72 (22)
Root canal treatment:	42 (13)
Reason for attending Clinic*	
Toothache:	232 (72)
Routine checkup:	13(4)
Mouth odour:	6 (2)
Cleaning:	11 (3)
Swollen mouth:	22 (7)
Bleeding gum:	16 (5)
Shaking teeth:	13 (4)
Hole in tooth	116 (36)

*=number of responses where one individual could have more than one response

Relationship between utilization of dental clinic and independent factors

There is a positive relationship between education and utilization of dental clinic, where respondents with a higher level of education use dental clinics more (<0.05). There is an inverse relationship between cost of treatment and utilization. Utilization decreases with rise in cost (<0.05). Patients use the dental clinic more when they perceive their problems as serious, are in serious pain and the drugs they have taken are ineffective. The presence of experienced dental staff will also improve utilization(<0.05). (Table 4)

Table 4: Logistic regression analysis showing relationship between utilization of dental clinic and independent factors

Independent variables	Coefficient (Standardized).	Std. error	p-value
Sex	-.01	.05	0.83
Marital status	0.03	.04	0.40
Religion	-0.05	0.13	0.27
Attended school	0.11	.19	0.03
Occupation	0.07	.01	0.15
Length of time lived in town	0.04	0.02	0.41
Knowledge of dental disease	0.03	0.16	0.50
Cost of treatment	-0.15	.072	0.03
Perceived seriousness of problem	0.27	0.06	<0.01
Recommended by friend	0.02	0.07	0.73
Experienced staff	0.28	0.06	<0.01
Close to house	-0.01	0.09	0.90
Serious pain	0.20	0.06	<0.01
Mobile teeth	-0.04	0.10	0.43
Swollen mouth	-0.03	0.061	0.52
Drugs ineffective	0.14	0.09	<0.01
Bad breath	-0.13	0.21	0.01

Adjusted R^2 = 0.396   Percentage of correct predictions = 39.6%

Utilization of Dental services by different SES groups

Attendance for routine checkup at dental clinic was more in Q4 and 5 SES groups.Toothache was a major reason for attendance at the dental clinic across all SES groups (P<0.05).The equity ratios for mouth odour and bleeding gums, point to equitable use of dental services among SES groups. Equity ratios for utilization due to toothache, swollen mouth and mobile teeth showinequity in utilization with the poorest quintile utilizing dental services more than the richest. While equity ratios for routine checkup, cleaning and hole in teeth utilization is more in the higher SES groups.

Table 3: Utilization of Dental services by different SES groups

Variable	N=329							
	Q1 n (%)	Q2 n(%)	Q3 n(%)	Q4n (%)	Q5n (%)	Total (%)	X^2 (P value)	Q1:Q5 ratio
Reason for attending Clinic								
Toothache:	54(22.9)	45(19.0)	49(20.8)	39(16.5)	49(20.8)	236 (100)	9.96 (0.04)	1.1
Routine checkup:	3(21.4)	2(14.3)	0(0)	5(35.7)	4(28.6)	14 (100)	5.59 (0.23)	0.7
Mouth odour:	0(0)	0(0)	3(50)	2(33.3)	1(16.7)	6 (100)	0.72 (0.39)	0
Cleaning:	5(13.2)	9(23.7)	5(13.2)	11(28.9)	8(21.0)	38 (100)	2.33 (0.13)	0.6
Swollen mouth:	8(33.3)	8(33.3)	1(4.2)	4(16.7)	3(12.5)	24 (100)	3.96 (0.04)	2.7
Bleeding gum:	4(25.0)	5(31.2)	3(18.8)	4(25.0)	0(0)	16 (100)	2.21 (0.14)	0
Shaking teeth	5(38.5)	0(0)	1(7.7)	5(38.5)	2(15.3)	13 (100)	8.53 (0.74)	2.5
Hole in tooth	17(14.7)	27(23.3)	27(23.3)	20(17.2)	25(21.5)	116 (100)	5.31 (0.25)	0.7

Cost of dental treatment

This table shows the cost of routine dental procedures and the mean cost of dental visit which includes the cost of registration, treatment and transportation. The basic dental procedures highlighted are extraction of adult teeth (excluding third molar extractions), amalgam filling and cleaning of teeth, root canal treatment and dentures. The average cost of treatment per case is 4,274.26 Naira (28.49 USD)

Table 5: Types of treatment and cost of dental visit per case

Variables (N=329)		
Treatment received at clinic	n (%)	Mean cost of procedure Naira:(USD)
Extraction of teeth	207 (62.91)	2202 (14.68)
Filling of teeth	44 (13.37)	2976.74 (19.84)
Cleaning of teeth	50 (15.19)	1931.17 (12.87)
Root canal	5 (1.52)	12400 (82.67)
Dentures	23 (6.99)	1861.42 (12.40)
Mean cost of visiting dental clinic: Naira (USD)		
Registration cost		250 (1.67)
Treatment cost:		4274.26 (28.49)
Transport cost		245.27 (1.63)
Total		4769.53 (31.80)

*150Naira =1USD. All costs in Naira. (2012)

Payment options and payment coping methods among different SES groups

Out of pocket payment without reimbursement was the major form of payment across all SES groups. The respondents in all the SES groups paid with their own money (P<0.05), payment for treatment by other individuals besides the patient was observed more in the poorer SES group (P<0.05). On the whole, 94.53% of respondents paid out of pocket without reimbursement and 0.91% of respondents were covered by healthinsurance.

Table 6: Preferred payment options and payment coping methods among different SES groups

Variable	N=329						(X²)P value
Payment options	Q1 n (%)	Q2 n (%)	Q3 (%)	Q4 (%)	Q5 (%)	Total	
Out of pocket with reimbursement	0 (0)	0 (0)	1 (20)	1 (20)	3 (60)	5 (100)	6.19(0.18)
Out of pocket without reimbursement	62 (19.93)	64 (20.58)	60 (19.29)	65 (20.9)	6019.29)	311 (100)	4.97 (0.2)
Insurance	2 (66.7)	0 (0)	0(0)	0 (0)	1 (33.3)	3 (100)	5.38 (0.25)
Installment	1 (12.5)	2(25)	4 (50)	0 (0)	1 (12.5)	8 (100)	5.86 (0.20)
In-kind	1 (50)	0(0)	1 (50)	0 (0)	0 (0)	2 (100)	3.00 (0.55)
Payment coping method							
Own money	46 (17.8)	53 (20.5)	56 (21.7)	50 (19.5)	53 (20.5)	258 (100)	5.53 (0.01)
Borrowed money	3 (42.8)	2 (28.6)	1 (14.3)	1 (14.3)	0 (0)	7 (100)	3.76. (0.43)
Someone else paid	15(28.8)	12 (23.2)	9 (17.3)	10 (19.2)	6 (11.5)	52 (100)	10.47 (0.01)
Exemption	1 (33.3)	2 (66.7))	0 (0)	0 (0)	0 (0)	1 (100)	5.35 (0.25)
Subsidized payment	1 (16.7)	1 (16.7)	0 (0)	1 (16.7)	3 (50)	6 (100)	4.16 (0.38)

IV. Discussion

From our study it was observed that majority of the respondents had a good knowledge of services rendered in the dental clinic however most of them just visited the clinic when they had a toothache or an obvious cavity in their tooth. These finding shows that poor utilization of dental services is due to a myriad of factors such as cost of care, low level of education, patients perceived treatment need e.t.c. and not only poor awareness of where to receive dental treatment.

A patients' perception of treatment need will influence utilization of dental care, because the respondents are probably not able to associate all the services they claim to know as being offered in the clinics with their own treatment needs and most patients only learn about the existence of restorative and preventive dental treatment after they have visited a clinic to extract one or more teeth. It is also worthy to note that the general attitude of people to medical care, dental care inclusive, which places more emphasis on curative rather than preventive treatment, will also reduce utilization of dental services.

Although many different factors influence the utilization of oral health services, we observed that one of the major reasons for delay in care seeking or failure to register occurrence of symptoms as evidence of illness by households is the dental treatment cost. [15] This delay which can be interpreted as a consequence of high dental treatment cost was observed in the large number of extractions documented in the study.

Dental care utilization was found to be higher in the richer SES group than the poorer and this could be as a consequence of their higher level of education leading to better awareness and acceptance of preventive measures for tooth decay, or a higher earning power which makes the cost of dental treatment bearable. However, the observation that irrespective of SES status majority of the respondents will only go to the clinic when they have a serious problem also points to the attitudinal problem associated with receiving dental care.

The most common means of payment for dental services as observed in our study is out of pocket payment. The anticipated expenditure on health is usually enormous and includes the direct cost of care, transportation costs to the health facility and the opportunity costs associated with absence from work, especially where a large number of the population are informally employed and household production depends on day-to-day labour intensive effort.[15] Thus poorer populations might have illness episodes but rather than report it, might say that they are not ill, overlook symptoms or may seek cheaper care from patent medicine dealers and shopkeepers or subscribe to home management.[20] This consequence of out of pocket payment for health care is considered a major impediment to utilization of services by households who need health care. [23] Out of pocket payment (OOP) is the major form of payment for health services in Nigeria, and no socio-economic class is exempted from this as it cuts across the socio-economic divide. The few people in the study who claimed to have paid for treatment with health insurance would most likely be Federal Government workers (formal sector); who are the only people currently benefiting from the country's National Health Insurance Scheme (NHIS). Majority of those in the poorer SES group who could not afford to pay for treatment got someone else to pay for them. This inability to pay bills and reliance on external support, will further reduce access and utilization of dental services. Thus the absence of financial risk protection which usually culminates in inequity in access and utilization of healthcare has been described as "a major problem of any health system"Nigeria inclusive.[20,21,22]

V. Conclusion

Majority of respondents regardless of their socioeconomic class seek care only when symptoms of disease are present. Utilization of available services is hampered not only by poor dental awareness but also by low educational status, cost of seeking care in a dental clinic and individual variations in perceived need of care. Financial risk protection mechanisms for dental health services are needed, so as to improve financial access and possibly improve utilization. This could be achieved by integrating oral health services into various health insurance benefit packages in Nigeria.

Study limitation.

The opportunity cost of going to receive dental treatment was not captured in this study. In addition this study was conducted in a clinical setting and the patients that do not come to clinic were missed.

References

[1].   BenoîtVarenne, Poul Erik Petersen, Florence Fournet, Philippe Msellati,Jean Gary, SeydouOuattara, Maud Harang and Gérard Salem. Illness-related behaviour and utilization of oral health services among adult city-dwellers in Burkina Faso: Evidence from a household survey.BMC Health Services Research,2006, 6:164

[2].   Varenne B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. Int Dent J,2006, 56:61-70.

[3].   Westaway MS, Viljoen E, Rudolph MJ. Utilisation of oral health services, oral health needs and oral health status in a periurban informal settlement. SADJ, 1999, 54:149-152.

[4].   Samba M, Guinan JC, Sangare A, Da-Danho V, Bakayoko-Ly R. Illnessrelatedbehaviour and utilization of oral health.Odontostomatol Trop,2004, 27:37-40

[5].   Adegbembo AO. Household utilization of dental services in Ibadan, Nigeria.Community Dent Oral Epidemiol,1994, 22:338-339.

[6].   Ouendo EM, Makoutode M, Paraiso MN, Wilmet-Dramaix M, Dujardin B. Itinéraire thérapeutique des malades indigents auBénin (pauvreté et soins de santé). Trop Med Int Health,2005,10:179-186.

[7].   Tapsoba H, Deschamps JP. Use of medicinal plants for the treatment of oral diseases in Burkina Faso.J Ethnopharmacol,2006,104:68-78.

[8].   Mosha HJ, Scheutz F. Perceived need and use of oral health services among adolescents and adults in Tanzania. CommunityDent Oral Epidemiol,1993, 21:129-132.

[9].   World Health Organization, Regional Office for Africa Oral Health in the African Region: A Regional Strategy (1999–2008), 1998.

[10].   Sofola O. O, Uti, O. G, Emeka O. Access to oral health care for HIV patients in Nigeria: Role of attending physicians. African Journal of Oral Health, 2004, 1: 37-41

[11].   Obuekwe O. Visiting Dental Surgeon at University of Connecticut advance.uconn.edu assessed by 31/5/2010

[12].   Petersen PE. Improvement of oral health in Africa in the 21st century the role of the WHO Global Oral Health Programme Developing Dentistry 5(1), 2004

[13].   Okunseri C. Self reported dental visits among adults in Benin City Nigeria (2004) www.ncbi.nlm.nih.gov/pubmed/15633502 assessed on 25/4/2010

[14].   Ajayi EO, Ajayi YO. Utilization of Dental Services in a population of Nigerian University Students. Nigerian Dental Journal, 2007, 15:83

[15].   Akaji EA, Oredugba FA, Jeboda SO. Utilization of dental services among secondary school students in Lagos, Nigeria. Nigerian Dental Journal, 2007, 15: 87

[16].   National Population Commission. Projected population of Enugu State, 2012 https://en.wikipedia.org/wiki/Enugu_State

[17].   Adeleke OA. List of Dental Clinics in South East Nigeria: Intercountry Center for Oral Health (ICOH) for Africa, Jos Nigeria (Unpublished data)

[18].   Filmer D, Pritchett LH. Estimating wealth effects without expenditure data-or tears: An application to educational enrollments in states of India. Demography, 2001, 38:115-132.

[19].   Thorpe SJ. Development of Oral Health in Africa. Med PrincPract, 2003;12:61–64

[20].   Petersen PE. Challenges to improvement of oral health in the 21st century - the approach of the WHO Global Oral Health Programme. Int Dent J, 2004, 54: 329-343.

[21].   Bratthall D, Petersen PE, Stjernswärd JR et al. Oral and craniofacial diseases and disorders. In Jamison DT, Breman JG, Measham AR, et al., (eds). Disease control prioritiesin developing countries. pp 723-736. New York: World Bank Health and Oxford University Press, 2006.

[22].   Odusanya OO, Nwalolo CC. Career aspirations of house officers in Lagos, Nigeria. Med Education, 2001,35: 482-7