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Barriers to Utilization of Dental Care by Patients Attending the GOPD of A Tertiary Hospital.

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Abstract
Background: There is low Oral health service utilization among Nigerians. Identification of these barriers will help health planners to determine the most appropriate way to overcome those barriers.
Aim: To investigate the barriers to seeking and utilizing dental care with a view to propose strategies that will create demand for dental care services and reduce barriers to utilizing dental care services.
Materials and methods: This was a cross-sectional survey of adult patients (≥ 18 years) presenting at the General Out-patient Department of the University of Abuja Teaching Hospital that were serially recruited considering some selection criteria. A total of 416 respondents whose ages ranged from 18 to 60 years were interviewed using interviewer-administered semi-structured questionnaire. Data collected were analyzed using SPSS version 23.
Results. The age of the respondents ranged from 18 to 60 years mean 33.22 years (SD = 10.11) with 54.6% females and 45.4% males. The majority (66.3%) reported no history of previous dental visit. Also, 62% reported barriers to seeking dental care services. Factor analysis showed that barrier factors of "Long waiting time and attitude of staff" (33%) (factor 1), "Accessibility of dental care" (14%) (factor 2), and "dental anxiety or odonto-phobia" (11%.) (factor 3), explain about 58% of the barriers to seek dental care.
Conclusion; The barriers to health seeking among the population studied are mostly due to the long waiting time and poor attitude of dental staff, access to dental care and dental anxiety.
Keywords: *Oral health care, Utilization, Barriers*

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I. Introduction

As described in the 2003 World Oral Health report, oral diseases have considerable impact on individuals and communities, as a result of the pain, suffering, impairment of function and reduced quality of life they impose on their sufferers. [1] Therefore, the importance of maintaining good oral health cannot be overemphasized. Despite the proven importance of regular dental care, there are still considerable barriers to getting the care. Previous studies have shown that there are barriers that need to be surmounted in order to help people get the needed professional dental care.[2,3,4] These barriers and a variety of others translate into unmet dental needs. A study in 2008 reported that the main barriers to dental care include cost of dental treatment, fear of dental treatment, accessibility of dental services, availability of dental services and characteristics of the dentist. [2]

Knowledge about utilization of dental services in Nigeria is inadequate and only a very small proportion of the population visit dentists on a regular basis [5] as suggested by the few existing literatures and anecdotal reports. Ogunbodede et al reported that 7.8% of students of Obafemi Awolowo University utilized dental care within the previous 12 months in 2001. [6] while Akaji et al reported 14.9% among students of the University of Lagos in 2007. [7] It therefore becomes pertinent to conduct this study because the findings will determine the designing of a model for the demand of dental care for the study location as well as inform policy processes related to dental care in Nigeria. Also, it will contribute to the body of knowledge and empirical literature. This current study will provide more information on the barriers people face in seeking dental care at the University of Abuja Teaching Hospital specifically and Nigeria in general visà-vis directing efforts to improve access to dental care services in same environments. The aim of this study therefore is to investigate the

barriers to seeking and utilizing dental care with a view to propose strategies that will create demand for dental care services and reduce barriers to utilizing dental care services.

II. Materials And Methods

This was a descriptive cross-sectional survey of patients drawn from the pool of adult patients (≥ 18 years) presenting at the General Out-patient Department of the University of Abuja Teaching Hospital Sample size was determined using formula for estimating single proportions as described by Armitage and Berry in Gahlinger and Abramson. [8] Respondents were selected for the study by serially recruiting them until the minimum sample size (416) calculated was attained.

Patients who were (≥ 18 years) seeking health care services in the GOPD of UATH evident by their registration card and consented to the study were included in the study and patients less than 18 years, acutely ill and did not consent were excluded.

Prior to the data collection, written approval for this study was obtained from the ethics committee of the University of Abuja Teaching Hospital, Gwagwalada. Verbal consent was obtained from the respondents before administering questionnaires.

A suitable questionnaire was developed and pre-tested. All the possible reasons that could be responsible for not seeking dental care were extracted from the respondents' responses and harmonized to form ten (10) barriers that were used to construct interviewer administered semi-structured questionnaire used to collect the required data. Respondents were asked to pick as many barriers as possible from the list of ten barriers. The questionnaire was pre-tested among patients attending Township Clinic, a primary health centre, which was about 20Km away from the University of Abuja Teaching Hospital. Twenty five (25) adult patients were chosen haphazardly to be part of the pre-test. The pre-test was done to ensure that the questions were acceptable; there was willingness to answer them and they were appropriate in eliciting responses that were consistent with the study objectives. Ambiguous questions were rephrased.

Data collected was verified before entry into the computer using Statistical Package for Social Science (IBM SPSS) software version 23. Data screening was done after all the questionnaires had been entered to identify and correct wrongful entry and extreme values. Univariate, bivariate and multivariate data analysis was done using SPSS.

III. Results

A total of 416 respondents were interviewed. The respondents were clients assessing health care services at the General Out-Patient department of the University of Abuja Teaching Hospital, Gwagwalada.

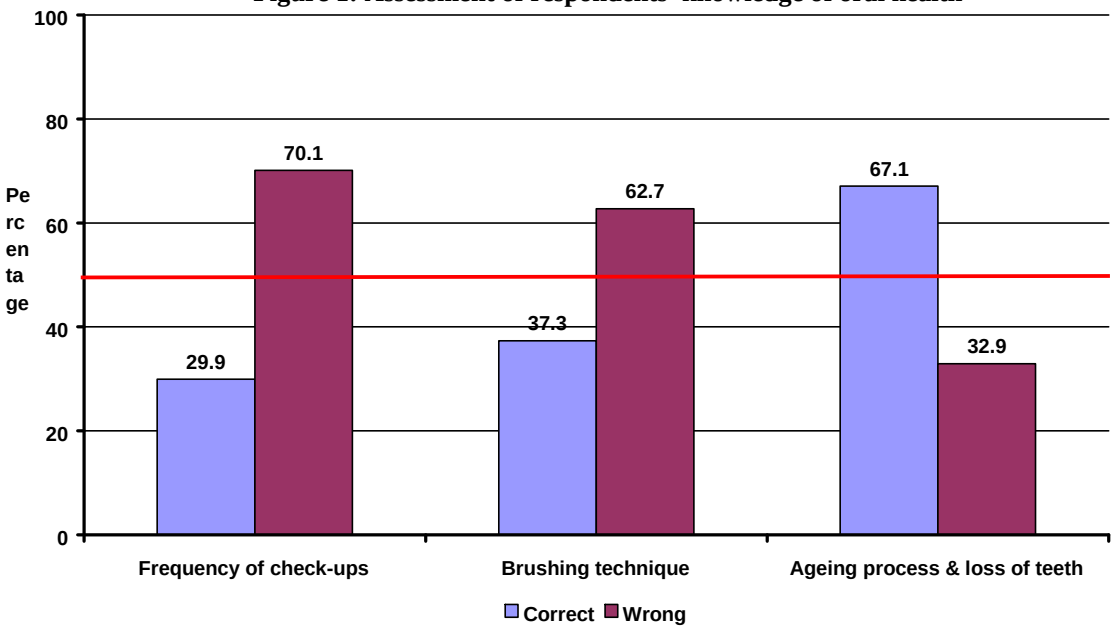
Table 1: Socio-demographic characteristics of respondents

Characteristic	Frequency (n = 416)	Percentage (%)
Age		
≤ 29	183	44.0
30-39	122	29.3
≥ 40	111	26.7
Sex		
Male	189	45.4
Female	227	54.6
Educational status		
None	16	3.8
Primary	34	8.2
Secondary	120	28.8
Post-secondary	246	59.1

Table 1 shows the socio-demographic characteristics of the study participants. The age of the respondents at the time of the interview ranged from 18 to 60 years. A higher proportion of the respondents (44.0% i.e. 183) were less or equal to 29 years; about 27.0% (111) were 40 years or more. The number of female respondents exceeded that of males 227 (54.6%). Two hundred and forty six (59.1%) respondents attended post-secondary institutions while only 3.8% of the respondents had no education.

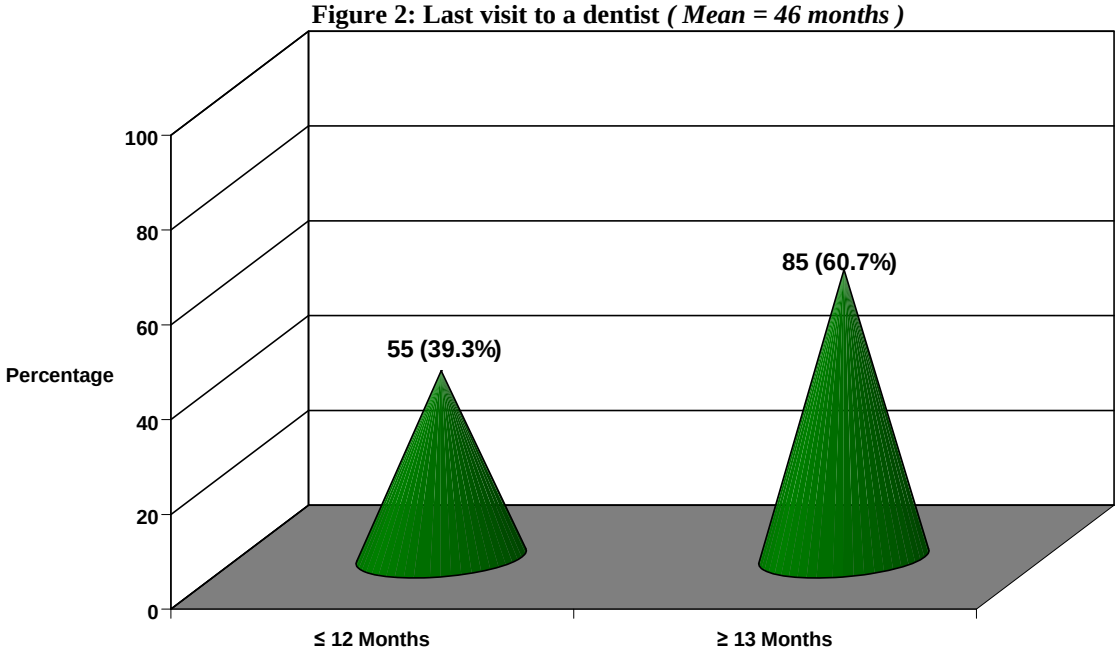
The frequency of dental checkup in a year was assessed More than 60% of respondents had wrong knowledge of frequency of check-ups (Figure 1)

Figure 1: Assessment of respondents' knowledge of oral health



Only one hundred and forty respondents reported history of previous dental visit. Most of them (60.7%) have not done so within the past 12 months. (Figure 2)

Figure 2: Last visit to a dentist *(Mean = 46 months)*



One hundred and fifty two 32.0% did not report any barrier while the remaining 68% reported one or more barriers as shown in Table 2.

Table 2: Distribution of respondents by the number of factors that can create barrier to dental care

Number of factors that can create barriers reported by respondents	Frequency	%
No barrier listed	158	38.0
1 barrier listed	133	32.0
2 barriers listed	33	7.9
3 barriers listed	37	8.9
4 barriers listed	13	3.1
5 barriers listed	16	3.8
6 barriers listed	9	2.2
7 barriers listed	11	2.6
8 barriers listed	3	0.7
9 barriers listed	2	0.5
10 barriers listed	1	0.2
Total	416	100.0

The distribution of respondents by the reported barriers to seeking dental care is shown in table 3. The most reported barrier to seeking dental care was lack of money (28.8%), followed by fear of pain (19.5%). The least reported barrier was fear of the dentist (4.8%).

Table 3: Barriers to utilizing dental care services arranged from most reported to least Reported

Barrier	%	
Lack of money		28.8
Fear of pain		19.5
Lack of dental services		19.2
Distance of available services		17.8
Long waiting time		16.8
Attitude of the staff		15.1
Fear of injection		12.7
Long duration of consultation & treatment	9.6	
Bad previous dental visit	5.8	
Fear of dentist		4.8

The barriers were subjected to a data reduction technique (factor analysis). The extraction method used (principal component analysis) indicated that all the barriers reported in the study were related to 3 factors

Table 4: Output of factor analysis extraction method (principal component analysis)

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
1	3.314	33.142	33.142	3.314	33.142	33.142
2	1.437	14.374	47.516	1.437	14.374	47.516
3	1.051	10.509	58.025	1.051	10.509	58.025
4	0.833	8.328	66.354			
5	0.743	7.426	73.780			
6	0.703	7.033	80.813			
7	0.537	5.372	86.185			
8	0.510	5.099	91.284			
9	0.444	4.440	95.724			
10	0.428	4.276	100.000			

Table 4 displays the result of varimax rotation method done to determine which factor the different barriers were more associated with. Long waiting time before seeing the dentist; long duration of dental consultation and treatment; attitude of the staff of the dental clinic; and previous dental visit experience that was bad were associated with factor 1. Non-availability of dental services/clinic; distance of available services from

home; and lack of money to access care were associated with factor 2. Fear of pain; fear of injection and fear of the dentist were associated with factor 3. (Table 5)

Table 5: Extracted Barrier Factors

Factor	Barriers
1	Long waiting time before seeing the dentist
	Long duration of dental consultation and treatment
	Attitude of the staff of dental clinic
	Previous dental visit experience that was bad
2	Non-availability of dental services
	Distance of available dental services from home
	Lack of money to access dental care
3	Fear of pain
	Fear of injection
	Fear of dentist

Chi square test was used to test the difference in the distribution of proportions by age group and sex.. The younger respondents reported poor attitude of staff and bad previous dental experience as barriers to seeking dental care. More females reported that fear of pain, injections and dentist could be a barrier for them to seeking dental care; 71.6%, 75.5% and 75.0% respectively. Table (6).

Table 6: Chi square test and p values by age group, sex and income quartiles across reported barriers

Factor	Barriers	Age group		Sex	
		X^2	p	X^2	p
1	Long waiting time before seeing the dentist	5.211	0.074	0.003	0. 531
	Long duration of dental consultation and treatment	4.55	0.103	0.154	0.413
	Attitude of the staff of dental clinic	6.041	0.049	0.143	0.404
	Previous dental visit experience that was bad	6.61	0.037	0.146	0.435
2	Non-availability of dental services	5.637	0.6	3.657	0.61
	Distance of available dental services from home	1.59	0.452	0.757	0.229
	Lack of money to access dental care	4.02	0.134	0.572	0.258
3	Fear of pain	3.65	0.161	11.777	0.001
	Fear of injection	4.292	0.117	10.706	0.001
	Fear of dentist	3.419	0.181	3.538	0.047

Tables 7, 8, and 9 are logistic models for the reported barriers in this study. The explanatory variables included in the models are age group, sex, educational status, and level of oral health knowledge. The models display the coefficient (B), p value,

Table 7: Logistic model for barriers to seeking dental care associated with factor 1

	Long waiting time (R^2 = 12.0%)			Duration of consultation (R^2 = 9.7%)			Attitude of staff (R^2 = 6.5%)			Bad dental experience (R^2 = 24.9%)		
	B	p	OR	B	p	OR	B	p	OR	B	p	OR
Age												
≤ 29 years			1.0			1.0			1.0			1.0
30-39 years	-0.037	0.92	1.0	-0.316	0.50	0.7	-0.021	0.95	1.0	-0.320	0.57	0.7
≥ 40 years	-0.886	0.05	0.4	-1.094	0.06	0.3	-0.923	0.04	0.4	-2.736	0.01	0.1
Sex												
Male			1.0			1.0			1.0			1.0
Female	0.040	0.89	1.0	0.164	0.66	1.2	-0.007	0.98	1.0	0.577	0.24	1.8

Education												
None			1.0			1.0			1.0			1.0
Primary	6.065	0.71	4.3	4.941	0.76	1.4	0.823	0.49	2.3	0.189	1.00	1.2
Secondary	5.946	0.72	3.8	5.217	0.75	1.8	0.419	0.70	1.5	7.179	0.92	1.3
Post-secondary	6.701	0.68	8.1	6.006	0.71	4.1	0.960	0.37	2.6	8.380	0.90	4.3
Level of oral knowledge												
None			1.0			1.0			1.0			1.0
Poor	-0.693	0.11	0.5	-0.288	0.59	0.8	-0.787	0.06	0.5	-0.879	0.14	0.4
Good	-0.162	0.71	0.9	-0.368	0.51	0.7	-0.499	0.24	0.6	-1.445	0.03	0.2
Excellent	-0.055	0.93	0.9	0.061	0.94	1.1	-0.973	0.18	0.4	-1.289	0.27	0.3

Table 8: Logistic model for barriers to seeking dental care associated with factor 2

	Non-availability of services (R^2 = 11.4%)			**Distance of service (R^2 = 12.9%)**			**Lack of money (R^2 = 15.9%)**		
	B	**p**	**OR**	**B**	**p**	**OR**	**B**	**p**	**OR**
Age									
≤ 29 years			1.0			1.0			1.0
30-39 years	-0.047	0.89	1.0	0.279	0.44	1.3	0.456	0.16	1.6
≥ 40 years	-1.105	0.01	0.3	-0.661	0.13	0.5	-0.236	0.52	0.8
Sex									
Male			1.0			1.0			1.0
Female	-0.427	0.14	0.7	0.057	0.85	1.1	-0.402	0.13	0.7
Education									
None			1.0			1.0			1.0
Primary	0.591	0.63	1.8	0.929	0.32	2.5	0.287	0.73	1.3
Secondary	0.640	0.56	1.9	-0.261	0.76	0.8	0.461	0.52	1.6
Post-secondary	0.997	0.36	2.7	0.309	0.71	1.4	0.621	0.38	1.9
Level of oral knowledge									
None			1.0			1.0			1.0
Poor	-1.194	<0.001	0.3	-1.45	<0.001	0.2	-0.589	0.11	0.6
Good	-1.063	0.01	0.3	-1.64	<0.001	0.2	-1.155	<0.001	0.3
Excellent	-1.121	0.09	0.3	-0.65	0.27	0.5	-0.462	0.41	0.6

Table 9: Logistic model for barriers to seeking dental care associated with factor 3

	Fear of pain (R^2 = 13.3%)			Fear of injection (R^2 = 10.5%)			Fear of dentist (R^2 = 17.5%)		
	B	**p**	**OR**	**B**	**p**	**OR**	**B**	**p**	**OR**
Age									
≤ 29 years			1.0			1.0			1.0
30-39 years	-0.002	1.00	1.0	0.013	0.97	1.0	-0.328	0.61	0.7
≥ 40 years	-0.530	0.20	0.6	-0.738	0.15	0.5	-2.061	0.07	0.1
Sex									
Male			1.0			1.0			1.0
Female	0.913	<0.001	2.5	0.933	0.01	2.5	0.606	0.30	1.8
Education									
None			1.0			1.0			1.0
Primary	0.653	0.60	1.9	-0.640	0.57	0.5	-7.119	0.69	0.0
Secondary	0.632	0.57	1.9	-0.719	0.42	0.5	-0.853	0.36	0.4
Post-secondary	1.433	0.19	4.2	-0.170	0.84	0.8	-2.148	0.03	0.1
Level of oral health knowledge									
None			1.0			1.0			1.0
Poor	-0.350	0.41	0.7	-0.655	0.18	0.5	-0.802	0.24	0.4
Good	-0.247	0.57	0.8	-0.303	0.54	0.7	-1.450	0.08	0.2
Excellent	0.355	0.56	1.4	0.308	0.65	1.4	-0.839	0.48	0.4

With respect to age, the overall picture is that as age increased, the OR decreased (inverse or negative relationship) i.e. it is less likely that the reported barriers will prevent respondents from seeking dental care as they become older. This relationship was significant ($p < 0.05$) among respondents ≥ 40 years for attitude of staff, previous bad dental experience and non-availability of dental services.

Fear of pain, injection and dentist were at least 2 times compared to males going to prevent females from seeking dental care. And it was significant for fear of pain and injection.

Barriers related to factor 1 were likely going to prevent respondents from seeking dental care the better educated they were. Though not significant, respondents that had secondary school education were 8 time more likely compared to those who did not have any form of schooling not going to seek dental care because of long waiting time spent at the facility.

IV. Discussion

Anecdotal reports suggest that the majority of Nigerians do not have access to adequate, affordable and acceptable oral health services. Oral health has not been given the attention it deserves in the country; as a result, many continue to be dentally neglected. The scanty oral health services available in the country are mainly in urban areas. [9] Nigeria is in sub-Saharan Africa between latitude 40 and 140 north of the equator and longitude 30 and 140 east of the Greenwich Meridian. The total population size is over 140 million (2006 census). [10] With this enormous population figure, it is inevitable that the dental needs and demands will be of high proportion. However, it has been reported that only 2.3 million Nigerians between the ages of 3 and 70 years attend dental clinics yearly for treatment. [11] This shows that the interplay of oral health status, need and

demand for dental services is neither simple nor direct. The aim of the study was to identify barriers to seeking dental care as perceived by patients attending the Out-patient department of University of Abuja Teaching Hospital. The literature could not provide the measuring instrument for assessing barriers to dental care in the setting of the current study. Therefore, a suitable instrument was developed to capture the data that will respond to the aim and objectives of the current study. The findings of the study should be of use to authorities and professionals planning programs aimed at increasing dental care utilization.

The study population was adults who by the law of Nigeria are ≥ 18 years and can take decisions on their own; they responded to interviewer administered questionnaires. The proportion of men and women by different age groups of the relatively young respondents (mean age was 33.22 years) was not significantly different ($p = 0.06$); indicating a good sampling for the study. The study population being young is not surprising because according to the last National Demographic and Health Survey (2008), Nigeria's population is young.[10]

A review of some Nigerian studies by Sofola revealed that between 52% and 80% of Nigerians had never been to a dentist. [12] The current study found that 66.3% of the respondents had never visited a dentist, a proportion within the range of previous Nigerian studies.

Only 55 (13.2%) respondents out of 416 had visited a dentist within the previous 12 months of the current study. This was comparable with 14.9% that Akaji et al found in Lagos among secondary school students. [7] In contrast, Bamise et al found that 7.8% of their study population at Ile-Ife indicated that they visited the dental hospital within the last 12 months [6] and Okunseri et al documented that 26% of the adults they studied at Benin reported having visited a dentist within the previous 12 months. [13] But the prevalence of dental visit in the previous 12 months at Kuwaiti as reported in a study by Al-Shammari et al was 58.4%. [14]

Considering the findings of this current study and the other Nigerian studies, prevalence of dental visit in the previous 12 months in Nigeria varies between 7.8% and 26%. This is very poor compared to 58.4% reported in the study done at Kuwaiti. Hence, 361 (86.8%) of the respondents had not visited a dentist in the last 12 months preceding the current study for routine dental check-up or dental treatment.

Ten barriers to seeking dental care were explored in the study. The five main barriers included lack of money (28.8%), fear of pain (19.5%), lack of dental services (19.2%), distance of available services (17.8%) and long waiting time (16.8%). Some Nigerian studies had reported similar findings. Bamise et al from their study among residential university students utilizing the dental clinic of a teaching hospital reported that anticipation of painful dental treatment; high dental charges, long waiting times and being too busy for a dental visit were cited as the most important impediments to seeking dental treatment. [6] Akaji et al and Salami et al reported that fear of dentist and dental fear respectively were reasons people did not want to visit the dentist for care or treatment. [7, 15] Interestingly, a good proportion of the respondents in this study (38%) claim that nothing could prevent them from seeking dental care.

Lack of money ranked the highest barrier to seeking care in this study. This finding corroborates a study by Kuttikkat, which identified cost of care as the most significant barrier to accessing dental care. [16] Also, Tulchinsky and Varavikova in their compilation stated that visits to dentists for preventive care, cleaning or restorative work is limited by economic factors and shortage of personnel in many countries. [17] Dental care is costly and like other health services, it does not obey the economic laws of supply and demand; over supply of dentists does not necessarily lower the prices of dental services by competition. [17] Unfortunately, many countries with universal health plans do not include dental care as a covered benefit largely because of high cost. This includes Nigeria.

From the current study, barriers to seeking dental care could be grouped into three categories. Those related to: The dental institution (Factor 1) which include long waiting time before seeing the dentist, long duration of dental consultation & treatment, attitude of the staff of the dental clinic and bad experience from a previous dental visit; Accessibility of dental care (Factor 2) comprise non-availability of dental services/clinic, distance of available services from home and lack of money to access care while Dental anxiety or odonto-phobia (Factor 3) include fear of pain, fear of injection and fear of the dentist.

According to Ensor and cooper, all the barriers above could stem from the demand side and/or the supply side. [18] Demand-side determinants are factors influencing the ability to use health services at individual, household or community level, while supply-side determinants are aspects inherent to the health system that hinder service uptake by individuals, households or the community. [19] Barriers related to the dental institution are predominantly demand side determinants, those related to dental anxiety are predominantly supply side determinants and those related to accessibility of dental care are mixed supply side and demand side barriers.

The three categories of barriers explain about 58% of why the study population might not seek dental care. Barriers related to the dental institution accounted for 33%, those related to accessibility of dental care accounted for 14% while those related to dental anxiety accounted for 11%. These findings show that the way

clients are attended to or managed when they access services is very important. The few dental clinic attendees will share their experiences with others. This will greatly affect their decision to attend or stay away.

The current study revealed that all the barriers explored were not likely going to prevent people ≥ 40 years from seeking dental care. Apart from the fear of injection and dentist, other factors were likely going to prevent highly educated people from seeking dental care. Long waiting time at the dental clinic was eight (8) times likely going to prevent respondents with post-secondary education from seeking dental care compared to those that did not go to school. The assumption is that highly educated people will be more enlightened and will demand courtesy from service providers; "customer is king". It is therefore pertinent that existing management and support structures focus on improving dental service delivery to get rid of the barriers related to the dental institution.

A bad dental experience was likely going to scare the women from visiting the dental clinic. Furthermore, female respondents were more likely not going to seek dental care because of dental anxiety compared to male respondents; this is similar to the finding of Kakatkar et al. [20] Dental anxiety has long been identified as a factor that affects the effective provision and acceptance of dental treatments by patients. [21] The experience of anxiety is a universal human phenomenon. Studies have shown a world-wide variation in the prevalence of dental anxiety with estimates ranging between 3% and 43%[90]. In this current study, all the barriers related to dental anxiety had prevalence within this range; 4.8%, 12.7% and 19.5% of the study population reported that they will be prevented from utilizing dental care services by fear of dentist, fear of injection and fear of pain respectively.

Another interesting finding is that increased oral health knowledge will help overcome the barriers to seeking dental care. But increased oral health knowledge was not likely going to overcome fear of pain and injection among the respondents. If increase education increases knowledge, the finding by Kakatkar et al in India that increase in education decreases the barriers for regular dental care is very important. [20] It means increased or continuous dental education will increase oral health knowledge to the point of overcoming fear of pain and injection. There is considerable evidence that dental fear is related to poorer oral health, reduced dental attendance and increased treatment stress for the attending dentist. [22] Needle fear, in particular, is a major issue given that the delivery of local anesthesia via injection is the central plank of pain relief techniques in dentistry and dentists as well as patients often avoid difficult injections as a consequence, resulting in poor pain control. [22]

This study found that 38% of the study population will not be barred by any factor to seek dental care. This proportion is more than twice the prevalence of dental visit in the previous 12 months (13.2%). Also, all the barriers reported in this present study could account for 58% of why the study population might not seek dental care. These suggest that there are barriers that were not elicited by this study. Further studies will be required to identify these "hidden" barriers using qualitative and quantitative research methods.

V. Conclusion

More than 60% of the respondents will be prevented from seeking dental care by one or more barriers. The most reported barrier was lack of money to pay for dental care services, then fear of pain and lack of dental services. The barriers by factor analysis were related to dental institution, accessibility of dental care and dental anxiety. Those related to dental institution accounted more for why respondents will not seek dental care. They are long waiting time before seeing the dentist, long duration of dental consultation or treatment, attitude of the staff of the dental clinic and a previous dental visit experience that was bad. It then becomes pertinent for dental health practitioners to review how dental service delivery is rolled out in dental clinics to draw clients to them. Addressing these barriers will increase dental service utilization and improve oral health status of the study population and beyond.

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