

## Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.

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### ABSTRACT:

**Introduction:** The relationship between cardiovascular diseases and dental conditions has been studied. However, the awareness of hypertensive patients about dental health care is very low in Nigeria. Hence, there is a need to assess the dental service utilisation in the population.

**Objective:** To assess the pattern and determinants of dental service utilisation in a population of hypertensives in Nigeria

**Methodology:** A descriptive cross-sectional study was conducted at the cardiology outpatient clinic of University of Port Harcourt Teaching Hospital (UPTH), Nigeria. Two hundred and thirty-six (236) consented subjects were enrolled to participate in the study. Interviewer-administered questionnaires were used to collect data on demographics, hypertension history, and dental service utilisation. The data collected was analysed on IBM SPSS 25. Descriptive statistics were carried out for the socioeconomic and dental utilisation variables. Pearson's Chi-square was used to test for the association between utilisation of dental services variables and the significant difference in the independent variables. Binary logistic regression was used to identify the factors independently associated with dental service utilisation. Significance was inferred at a p-value of  $\leq 0.05$ .

**Results:** The mean age of the subjects was  $55 \pm 14.1$  years. Most of the subjects were in the 50-59-year age group. The mean hypertension duration of the subjects was  $9.56 \pm 8.3$  years. The male-female ratio was 1:1.2. More of the subjects, 126(53.4%), had never visited the dentist before than the 110(46.6%) who had visited. Of those who had visited before, 55(50%) visited within the last 2 to 5 years. The commonest procedure in the last visit was for scaling and polishing 54(22.9%), followed by filling of cavities 33(14%) and tooth extraction 35(14.8%).

The bivariate assessment of the utilisation of the dental clinic (Have you visited the dental clinic before?) showed that the educational status of the subjects was the only significant factor ( $p=0.001$ ).

Marital status and educational status were the factors associated with utilisation of dental services, independent of other factors, with  $p=0.03$ , odds ratio 0.51 and  $p=0.001$ , odds ratio 0.53, respectively.

**Conclusion:** This study emphasizes that socioeconomic factors are strong determinants of dental service utilisation. Higher educational status and being married, which have been well-documented to positively influence health-seeking behaviour, were also found to be strong determinants of dental services utilisation among hypertensives. It is therefore important that policies that make mass education affordable and available be put in place to enhance dental service utilisation and overall health-seeking behaviour of the entire population.

**KEYWORDS:** Dental service utilisation, Hypertension, Determinants, Socioeconomic

### INTRODUCTION

Hypertension, a leading risk factor for morbidity and mortality globally<sup>1</sup> affects more than a third of the world's population<sup>2</sup>, with over 50% of premature deaths attributed to its aftermath<sup>3</sup>. Its high morbidity and mortality rate also puts a heavy economic burden on families and society<sup>4</sup>. The absence of initial clinical symptoms in affected patients earned hypertension the term "silent killer". A reading of systolic blood pressure (SBP)  $\geq 140$ mmHg and/or diastolic pressure (DBP)  $\geq 90$ mmHg<sup>5</sup> is regarded as hypertension. Ageing, stress, and changes in behaviour and lifestyle are causing an increase in the prevalence of hypertension. A prevalence of 31.1% exists among the world's adults; 28.5% and 31.5% in high-income and low- and middle-income countries, respectively<sup>6</sup>. In the 2017 American College of Cardiology/American Heart Association guidelines, hypertension prevalence was said to be 45.6%

## Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.

in American adults<sup>7</sup>, while 25.4% of the participants in Kenya, Nigeria, Tanzania, and Uganda were found to be hypertensive in a survey carried out among adults aged 18 years and above in seven communities<sup>8</sup>.

Oral health, a state of being free of chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects (cleft lip and palate), periodontal (gum) disease, and any other disorders that affect the mouth and oral cavity<sup>[9]</sup> is an essential component of an individual's overall health. Discomfort and pain with difficulty in chewing, swallowing and speaking, and sometimes sleep disruptions that usually accompany oral diseases result in a downturn in the individual's quality of life<sup>[9]</sup>. The high prevalence of oral diseases makes it a major public health concern.

Some oral diseases and systemic conditions have been incriminated to have a bidirectional relationship. Cardiovascular diseases (CVDs) and their long-term mortality are associated with periodontal disease and poor oral hygiene indicators<sup>10</sup>. Poor oral health and periodontal disease have been named as important risk factors associated with increased prevalence of hypertension<sup>11,12</sup>. A significant positive correlation was shown to exist between periodontal disease and increased incidence of hypertension<sup>13-15</sup>. Arowojolu et al<sup>16</sup> reported a statistically significant relationship between systolic and diastolic blood pressure with oral hygiene index among a group of Nigerian patients undergoing echocardiogram. Significant impacts on blood pressure (BP) control<sup>17</sup> may result from systemic inflammation, immunologic reactions and endothelial dysfunction caused by periodontal infections. Recently, in hypertensive patients with periodontitis, several studies have shown that periodontal treatment is beneficial for controlling BP<sup>18,19</sup>. Reduced salivary flow in xerostomia (dry mouth) and GO resulting from antihypertensive therapy reduced the oral self-cleansing effect and caused interference with oral hygiene practice, thereby enhancing poor oral hygiene and increasing risk of developing periodontal disease<sup>3</sup>. Soroye et al<sup>20</sup> found in their study a significant relationship between GO and oral hygiene status; hence, they suggested that periodontal care be included in the management of hypertensives.

The major aetiologic factor associated with the pathogenesis of periodontal diseases is bacterial plaque. Removal and prevention of dental microbial plaque occupy a major position in the prevention of periodontal disease. The quantity of microbial plaque is closely related to the frequency of toothbrushing and professional cleaning<sup>21</sup>. Professional cleaning can only be assessed by utilising dental services.

Dental service utilisation (DSU) is influenced by income, infrastructure, and cultural factors; hence, the prevalence varies widely from country to country, with a global mean of 54%. In Nigeria, DSU is generally low. Adeniyi et al, in an appraisal of the oral health system in Nigeria, found that less than 20% of Nigerians visit a dentist regularly<sup>[22]</sup>. DSU among Nigerians ranges between 15.5% and 55.9%, and more than half did so for symptomatic reasons<sup>23-25</sup>. A study in Cameroon<sup>26</sup> recorded a DSU of 37.9% among hypertensive patients. Regular dental service utilisation (DSU) ensures prevention, early diagnosis, and treatment of periodontal diseases, which may significantly reduce the prevalence of hypertension as well as its morbidity and mortality. Moreover, DSU is closely related to the frequency of professional dental cleaning, which significantly affects the quantity of bacterial plaque, the main culprit in the pathogenesis of periodontal disease. With increasing evidence that periodontal disease may increase the incidence of hypertension and influence blood pressure control negatively<sup>13-15</sup>; regular removal of plaque is essential to the reduction of the incidence of hypertension and improvement of its control in affected individuals. The evidence on the association of oral health behaviours with hypertension in our environment is limited, as previous research focused mainly on high-income developed countries<sup>27</sup>. The experience may be different in middle-income and low-income countries like ours, where dental care is paid less attention. Information about the proportion of individuals who access dental services in a population is an important parameter for planning effective and efficient oral health services. This forms the basis for this study; in addition, information on dental service utilisation among Nigerian hypertensives is sparse. Consequently, in this study, we investigated the pattern and determinants of dental service utilisation in a group of Nigerian hypertensive patients. The result of this study will form a database to determine the level of interventions required to boost their DSU that will enhance prevention, early diagnosis and treatment of periodontal diseases, which in turn may reduce the risk and progression of CVDs in this vulnerable population.

### METHODOLOGY

A descriptive cross-sectional study was conducted at the cardiology outpatient clinic of University of Port Harcourt Teaching Hospital (UPTH) in South-South, Nigeria. Ethical approval was obtained from the hospital's ethics committee. The inclusion criteria were freely consented dentate Nigerian patients having 10 teeth or more in each jaw, 18 years and above, diagnosed with hypertension for at least 1 year before the study. Patients who had undergone any form of periodontal therapy within 6 months before the commencement of the study were excluded.

The minimum required sample size 'n' was based on the formula  $n = \frac{Z^2 P(1-P)}{d^2}$

Where n = Minimum sample size, Z = Z statistic for a level of confidence, P = expected prevalence or proportion, and d = level of precision. (P) was assumed to be 14% (prevalence of severe periodontitis among hypertensive patients) from a previous study<sup>28</sup>. Z = 1.96 corresponding to 95% confidence level, P = 14%, d = 5% = 0.05

## Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.

$$n = \frac{1.96^2 \times 0.14 \times (1 - 0.14)}{0.05^2} = \frac{3.84 \times 0.14 \times 0.86}{0.0025} = 184.9$$

Putting non-response rate at 10%, the minimum required sample size for this study will be  $185 + 19 = 204$

Two hundred and thirty-six (236) consented subjects were enrolled to participate in the study.

1. Interviewer-administered questionnaires were used to collect data on demographics, hypertension history, and dental service utilisation. The hypertension history was confirmed from the patient's medical record. Periodontal status was assessed using the Community Periodontal Index (CPI), a universally accepted tool as a standard index for periodontal disease, which is simple and highly reproducible. It involves the use of a specially designed CPI-WHO probe with a 0.5mm ball end. The recording is based on bleeding, calculus, and pocket depth on a scale of 0-4. CPI = 0, healthy; CPI = 1, bleeding. CPI = 2, calculus; CPI = 3, periodontal pocket 4–5 mm; CPI = 4, periodontal pocket 6 mm or more. CPI = X, excluded sextant (fewer than 2 teeth presented). The greatest CPI score among all sextants is used for analysis.

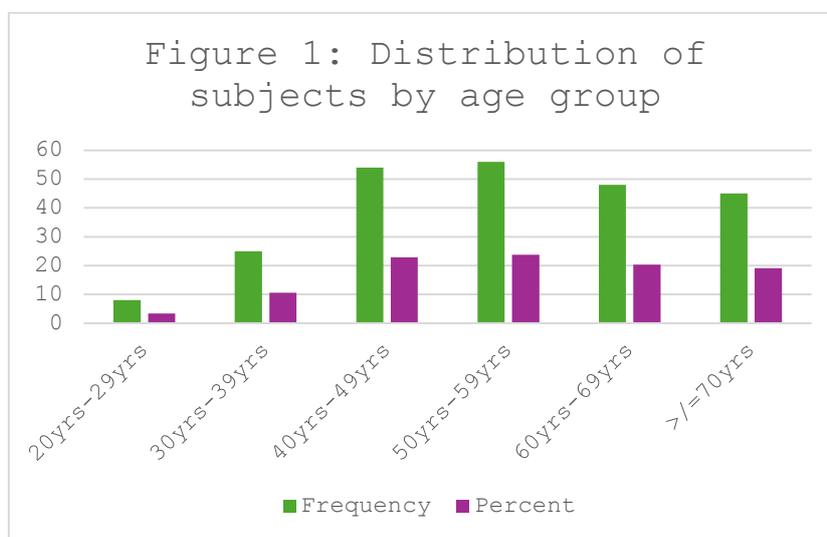
### Procedure

After obtaining written informed consent, a pretested, structured interviewer-administered questionnaire was completed for each participant. Two dentists with assured inter-examiner reliability were involved in the intra-oral examination of each participant using sterile mouth mirrors and WHO probes, with the subject sitting comfortably on a chair in a well-lit room to record.

### DATA ANALYSIS

The data collected was analysed on IBM SPSS 25. Descriptive statistics was carried out for the socioeconomic and dental utilisation variables. For continuous variables, the mean and measures of variability were assessed, and for those that are categorical, percentages and proportions were computed. Bivariate analysis using Pearson's Chi-square was used to test for association between utilisation of dental services variables and the significant difference in the independent variables. Multivariate analysis using binary logistic regression was employed to identify the factors independently associated with dental service utilisation, while controlling for confounders. Significance was inferred at a p-value of  $\leq 0.05$ .

### RESULTS



A total of 236 subjects participated in this study with a mean age of  $55 \pm 14.1$ , ranging from 22 years to 83 years. Most of the subjects were in the 50-59 years age group (Figure 1). The mean oral hygiene score was  $2.14 \pm 1.27$ , while the mean hypertension duration of the subjects was  $9.56 \pm 8.3$  years. The male-female ratio was 1:1.2. Most of the subjects were married 187(79.2%) followed by the widows/widowers 26(11%), the singles were 20(8.5%). The majority of the subjects (130, 55.1%) attained a level of education beyond secondary, while the least educated were those with no formal education (12, 5.1%). One hundred eighty-five (78.4%) of the subjects had some form of employment, while 51 (21.6%) were unemployed. Most 82(34.7%) of the subjects have been diagnosed with hypertension for 5 to 10 years. Gingivitis was the most prevalent 143(60.2%) periodontal condition among the subjects studied, while 3(1.3%) had severe periodontitis. A larger number of the subjects had fair oral hygiene 111(47%), while 51(21.6%) had poor. More of the subjects, 126(53.4%), had never visited the dentist before than the 110(46.6%) who had visited. Of those who had visited before, 55(50%) visited within the last 2 to 5 years. The commonest procedure in the last visit was for scaling and polishing 54(22.9%), followed by filling of cavities 33(14%) and tooth extraction 35(14.8%). (Table 1)

**Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.**

**Table 1: Description of the variables**

Variable		Frequency	Percentage
<b>Gender</b>	Male	107	45.3
	Female	129	54.7
<b>Marital status</b>	Single	20	8.5
	Married	187	79.2
	Widow/widower	26	11
	Divorced	3	1.3
<b>Educational status</b>	None	12	5.1
	Primary	35	14.8
	Secondary	59	25
	Post-secondary	130	55.1
<b>Employment status</b>	Employed	185	78.4
	Unemployed	51	21.6
<b>Hypertension duration</b>	<5 years	77	32.6
	5-10 years	82	34.7
	>10 years	77	32.6
<b>Periodontal health</b>	Healthy (CPI 0)	40	16.9
	Gingivitis (CPI 1&2)	143	60.2
	Mild to moderate periodontitis (CPI 3)	50	21.2
	Severe Periodontitis (CPI 4)	3	1.3
<b>Oral hygiene status</b>	Good (0.1-1.2)	74	31.4
	Fair (1.3-3.0)	111	47
	Poor (3.1-6.0)	51	21.6
<b>Have you visited the dentist before</b>	Yes	110	46.6
	No	126	53.4
<b>When was the last visit</b>	<1 year	28	11.9
	2-5 years	55	23.3
	>5 years	27	11.4
<b>Last visit for</b>	Check up	22	9.3
	Filling of cavities	33	14
	Scaling and polishing	54	22.9
	Tooth extraction	35	14.8
	Denture	2	8
	Other	1	4

Table 2 shows the bivariate assessment of the utilisation of the dental clinic (Have visited the dental clinic before?). There was no significant difference in the various variables assessed, including age group, gender, hypertension duration, periodontal status and others, except the educational status of the subjects (p=0.001).

**Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.**

**Table 2: Bivariate analysis of the association between the independent variables and utilization of the dental clinic by the subjects.**

Variable	Have you visited a dentist before?			P value
	Yes n(%)	No n(%)	Total	
<b>Age group (years)</b>				0.07
20-29	2(25)	6(75)	8	
30-39	15(60)	10(40)	25	
40-49	24(44.4)	30(55.6)	54	
50-59	29(51.8)	27(48.2)	56	
60-69	15(31.3)	33(68.8)	48	
≥70	25(55.6)	20(44.4)	45	
<b>Gender</b>				0.62
Male	48(44.9)	59(55.1)	107	
Female	62(48.1)	67(51.9)	129	
<b>Marital status</b>				0.15
Single	7(35)	13(65)	20	
Married	86(46)	101(54)	187	
Widow/widower	14(53.9)	12(46.2)	26	
Divorced	3(100)	0	3	
<b>Educational status</b>				0.001*
None	3(25)	9(75)	12	
Primary	11(31.4)	24(68.6)	35	
Secondary	20(33.9)	39(66.1)	59	
Post-secondary	76(58.5)	54(41.5)	130	
<b>Employment status</b>				0.48
Employed	84(45.4)	101((54.6)	185	
Unemployed	26(50.1)	25(49.9)	51	
<b>Hypertension duration</b>				0.36
<5 years	37(48.1)	40(51.9)	77	
5-10 years	42(51.2)	40(48.8)	82	
>10 years	31(40.3)	46(59.7)	77	
<b>Periodontal health status</b>				0.27
Healthy (CPI 0)	23(57.5)	17(42.5)	40	
Gingivitis (CPI 1&2)	66(46.2)	77(53.9)	143	
Mild to moderate periodontitis (CPI 3)	19(38)	31(62)	50	
Severe Periodontitis (CPI 4)	2(66.7)	1(33.3)	3	
<b>Oral hygiene status</b>				0.19
Good (0.1-1.2)	41(55.4)	33(44.6)	74	
Fair (1.3-3.0)	47(42.3%)	64(57.7%)	111	
Poor (3.1-6.0)	22(41.3%)	29(56.9%)	51	

\*significant

Table 3 pictures how recently the subjects utilised the dental clinic, marital status (p=0.01), educational status (p=0.001) and employment status (p=0.03) showed significant difference, other variables were not significantly associated (p>0.05).

**Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.**

**Table 3: Association Between The Variables And Time Of Dental Service Utilisation**

\*significant

Variable	When last did you visit a dentist?			Total	P value
	<1 year	2-5years	>5years		
	n(%)	n(%)	n(%)		
<b>Age group (years)</b>					
20-29	0	2(100)	0	2	0.09
30-39	6 (40)	7(46.7)	2(13.3)	15	
40-49	7(29.2)	12(50)	5((20.8)	24	
50-59	5(17.2)	17(58.6)	7(24.1)	29	
60-69	6(40)	8(53.3)	1(6.7?)	15	
≥70	4(16)	9(36)	12(48)	25	
<b>Gender</b>					
Male	9(18.8)	27(56.3)	12(25)	48	0.36
Female	19(30.1)	28(45.2)	15(24.2)	62	
<b>Marital status</b>					
Single	4(57.1)	2(28.6)	1(14.3)	7	0.01*
Married	21(24.4)	47(54.7)	18(20.9)	86	
Widow/widower	3(17.7)	6(35.3)	8(47.1)	17	
Divorced	0	0	0	0	
<b>Educational status</b>					
None	0	0	3(100)	3	0.01*
Primary	1(9.1)	4(36.4)	6(54.6)	11	
Secondary	6(30)	10(50)	4(20)	20	
Post-secondary	21(27.6)	41(54)	14(18.4)	76	
<b>Employment status</b>					
Employed	21(25)	47(56)	16(19.1)	84	0.03*
Unemployed	7(26.9)	8(30.8)	11(42.3)	26	
<b>Hypertension duration</b>					
<5 years	10(27)	18(48.7)	9(24.3)	37	0.47
5-10 years	12(28.6)	23(54.8)	7(16.7)	42	
>10 years	6(19.4)	14(45.2)	11(35.5)	31	
<b>Periodontal health status</b>					
Healthy (CPI 0)	9(39.1)	11(47.8)	3(13)	23	0.47
Gingivitis (CPI 1&2)	15(22.7)	32(48.5)	19(28.8)	66	
Mild to moderate periodontitis (CPI 3)	3(15.8)	11(57.9)	5(26.3)	19	
Severe Periodontitis (CPI 4)	1(50)	1(50)	0	2	
<b>Oral hygiene status</b>					
Good (0.1-1.2)	13(31.7)	22(53.7)	6(14.6)	41	0.35
Fair (1.3-3.0)	11(23.4)	23(48.9)	13(27.7)	47	
Poor (3.1-6.0)	4(18.1)	10(45.5)	8(36.4)	22	

Assessment of the association of the specific dental procedure and service utilized (Table 4) showed that only the gender and the periodontal health status of the subjects showed a significant difference for the routine dental check-up, with  $p=0.03$  for each. For scaling and polishing educational status ( $p=0.001$ ), employment status ( $p=0.03$ ) and periodontal health status ( $p=0.01$ ) showed significant difference, other factors did not ( $p>0.05$ ). Utilisation of tooth extraction services was associated with a significant difference in educational status ( $p=0.01$ ) and employment status ( $p=0.02$ ) of the subjects; other variables, including hypertension duration, were not associated ( $p>0.05$ ). Filling of cavities and other forms of services utilisable showed no significant difference in any of the independent variables.

**Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.**

**Table 4: Association Between The Variables And The Specific Dental Services Utilised.**

\*significant

Variable	Check-up n (%)	Cleaning (S &P) n (%)	Filling n (%)	Extraction n (%)	Others n (%)
<b>Total</b>	<b>22</b>	<b>54</b>	<b>33</b>	<b>35</b>	<b>3</b>
<b>Age group (years)</b>					
20-29	0	0	1(3)	1(2.9)	0
30-39	2(9.1)	8(14.8)	5(15.2)	4(11.4)	0
40-49	8(36.4)	12(22.2)	5(15.2)	6(17.1)	0
50-59	7(31.8)	17(31.5)	11(30)	10(28.6)	0
60-69	3(13.6)	7(13)	7(21.2)	2(5.7)	1(33.3)
≥70	2(9.1)	10(18.5)	4(12.1)	12(34.3)	2(66.7)
<b>p-value</b>	<b>0.27</b>	<b>0.60</b>	<b>0.26</b>	<b>0.26</b>	<b>0.27</b>
<b>Gender</b>					
Male	14(63.6)	22(40.7)	13(39.4)	11(31.4)	2(66.7)
Female	8(36.4)	32(59.3)	20(60.6)	24(68.6)	1(33.3)
<b>p-value</b>	<b>0.03*</b>	<b>0.34</b>	<b>0.56</b>	<b>0.08</b>	<b>0.42</b>
<b>Marital status</b>					
Single	2(9.1)	2(3.7)	1(3)	4(11.4)	0
Married	17(17.3)	46(85.2)	25(75.8)	24(68.6)	2(66.7)
Widow/widower/Divorced	3(13.6)	6(11.1)	7(21.2)	7(20)	1(33.3)
<b>p-value</b>	<b>0.82</b>	<b>0.37</b>	<b>0.58</b>	<b>0.21</b>	<b>0.53</b>
<b>Educational status</b>					
None	0	0	0	3(8.6)	0
Primary	0	2(3.7)	4(12.1)	5(14.3)	0
Secondary	2(9.1)	5(9.3)	7(21.2)	9(25.7)	0
Post-secondary	20(90.9)	47(87)	22(66.7)	18(51.4)	3(100)
<b>p-value</b>	<b>0.07</b>	<b>0.001*</b>	<b>0.62</b>	<b>0.01*</b>	<b>0.71</b>
<b>Employment status</b>					
Employed	18(81.8)	46(85.2)	26(78.8)	22(62.9)	2(66.7)
Unemployed	4(18.2)	8(14.8)	7(21.2)	13(37.1)	1(33.3)
<b>p-value</b>	<b>0.50</b>	<b>0.03*</b>	<b>0.70</b>	<b>0.02*</b>	<b>0.70</b>
<b>Hypertension Duration (yrs)</b>					
<5 years	6(27.3)	19(35.2)	12(36.4)	15(42.9)	0
5-10 years	8(36.4)	24(44.4)	13(39.4)	12(34.3)	1(33.3)
>10 years	8(36.4)	11(20.4)	8(24.2)	8(22.9)	2(66.7)
<b>p-value</b>	<b>0.60</b>	<b>0.17</b>	<b>0.83</b>	<b>0.37</b>	<b>0.26</b>
<b>Periodontal health status</b>					
Healthy (CPI 0)	9(40.9)	17(31.5)	9(27.3)	4(11.4)	0
Gingivitis (CPI 1&2)	8(36.4)	27(50)	19(57.6)	23(65.7)	3(100)
Mild to moderate periodontitis (CPI 3)	4(18.2)	8(14.8)	3(9.1)	8(22.9)	0
Severe Periodontitis (CPI 4)	1(4.5)	2(3.7)	2(6.1)	0	0
<b>p-value</b>	<b>0.03*</b>	<b>0.01*</b>	<b>0.06</b>	<b>0.23</b>	<b>0.45</b>

When the confounders were controlled for with a binary logistic regression, marital status and educational status were associated with utilization of dental services independent of other factors with p = 0.03, odds ratio 0.51 and p = 0.001, odds ratio 0.53 respectively (Table 5).

## Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.

**Table 5: Binary Logistic Regression To Assess The Relationship Between The Variables And Dental Services Utilization**

Variables	B	S.E.	Wald	df	Sig.	Exp(B)
Age group	-.088	.136	.421	1	.516	.916
Gender	-.133	.287	.213	1	.645	.876
Marital Status	-.672	.316	4.518	1	.034*	.511
Educational status	-.644	.176	13.422	1	.000*	.525
Step 1 <sup>a</sup> Employment Status	-.196	.392	.250	1	.617	.822
Hypertension duration	.123	.202	.368	1	.544	1.131
Periodontal Health Status	.204	.256	.633	1	.426	1.226
Oral Hygiene Status	.168	.235	.512	1	.474	1.183
Constant	3.680	1.153	10.183	1	.001	39.635

\*significant

### DISCUSSION

Most of the subjects were in the 40-59 years age group, which is essentially the middle-aged cluster in any population. The mean oral hygiene score was  $2.14 \pm 1.27$ , indicating a predominance of fair oral hygiene among the subjects. This is similar to previous Nigerian studies<sup>29,30</sup>. An average subject in this study has been diagnosed with hypertension for about 10 years. There were more females in this study, as there were more married subjects; this is consistent with other studies that showed health-seeking behaviour is higher in women compared to men<sup>31,32</sup>. More than half of the subjects in this study attained a post-secondary level of education, while approximately 5% had no formal education at all. Almost 80% of the subjects had one form of employment or the other, while the remaining had none. The Nigerian Bureau of Statistics reported an employment rate averaging 81.23% between 2014 and 2024<sup>33</sup>. Gingivitis was the most common periodontal condition among the subjects, with a 60.2% prevalence, while severe periodontitis was minimal among the subjects. This pattern is consistent with other studies<sup>34,35</sup>. More than half of the subjects had never visited the dental clinic before, and of those who had visited before, 50% did so within the last 2 to 5 years. This can be explained by the low level of dental health awareness among Nigerians<sup>36</sup>. The commonest procedure in their last visit was scaling and polishing, followed by filling of cavities, and then tooth extractions. This contradicts other studies that reported tooth extraction as the commonest procedure<sup>36,37</sup>.

Only the educational status of the subjects showed a significant relationship with utilisation of the dental services, exemplified by their ever visiting the dental clinic; this is similar to the findings of Soroye et al in Nigeria<sup>38</sup>, other factors were not associated, including the duration of diagnosis of their hypertension, even though many of them likely visit the physician in the hospital for the management of their high blood pressure. Marital status, educational status and employment status were significant determinants of how recently the subjects utilised the dental clinic. This follows the trend in several other studies<sup>39,40,41</sup>. The gender and the periodontal health status of the subjects were significant factors for utilisation of dental service for routine dental check-up. Educational status, employment status and periodontal health status of the subjects were the associated significant factors for the utilisation of dental services for scaling and polishing. Utilisation of the dental services for tooth extraction services was significantly associated with factors such as educational status and employment status of the subjects. Utilisation of dental services for filling of cavities and other forms of services utilisable were not associated with any of the independent variables. When the confounders were adjusted for, only marital and educational status were related to the utilisation of dental services by this population of hypertensives, independent of other factors. Socioeconomic inequalities have been reported by several researchers as a significant factor determining the utilisation of dental services in many communities<sup>39,40,41</sup>. Employment status will determine the ability of the people to bear the cost of registration, consultation and treatment in many cases. Educational status of the people will influence their utilisation of dental facilities, as their knowledge about dental health and hygiene is enhanced with higher status<sup>42</sup>. The females have a better health-seeking behaviour than the males<sup>31,32</sup>, this may explain why gender is a significant factor in dental services utilisation in this study. Most of the respondents in this study are married, and the significant effect on the utilisation of dental services may be explained by the positive influence of partners of health-seeking<sup>43</sup>, and this is evident in this study.

### CONCLUSION

This study emphasises that socioeconomic factors are strong determinants of dental service utilisation. Higher educational status and being married, which have been well-documented to positively influence health-seeking behaviour, were also found to be strong determinants of dental services utilisation in this study. It is therefore important that policies that make mass education affordable and available be put in place to enhance dental services utilisation and overall health-seeking behaviour of the entire population. Dental health education and promotion must be directed at homes, not just schools or individuals, since marriage also positively

## Pattern of Dental Service Utilization (DSU) and Its Determinants Among Hypertensive Patients in a Nigerian Tertiary Health Centre.

impacts dental services utilisation. Policymakers should also direct efforts at further improving the financial and economic capacity of the citizens, because when the people find out they can afford treatment, they will utilise the services when available.

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