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Oral hygiene status and practices of hypertensive patients attending a tertiary facility in south-south Nigeria

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Abstract

Background: Hypertension is a prevalent chronic condition and a major contributor to morbidity and mortality globally. Poor oral hygiene (OH) and periodontal disease have been linked with hypertension and its complications. OH status and practices were assessed among hypertensive patients to identify associated sociodemographic and behavioral factors.

Methods: 236 hypertensive patients aged 18 years and above, dentate, and diagnosed with hypertension for at least one year were recruited using interviewer-administered questionnaires and oral examinations. OH status was evaluated using the Simplified Oral Hygiene Index (OHI-S), and data were analyzed using IBM SPSS version 25. Associations were assessed with Chi-square and ordinal logistic regression, with significance set at $p < 0.05$.

Results: The mean age of participants was 55.06 ± 14.17 years, Male:Female ratio was 1:1.2. 83.5% and 78.4% used toothbrushes and fluoridated toothpaste respectively; 34.3% brushed twice daily, and effective interdental cleaning was performed by just 16.5%. OH status was good, fair, and poor in 31.4%, 47.0% and 21.6% respectively. Significant associations were found between OH status and age group ($p = 0.000$), ethnicity ($p = 0.025$), educational status ($p = 0.043$), employment ($p = 0.006$), dentifrice type ($p = 0.010$), brushing frequency ($p = 0.014$), interdental cleaning ($p = 0.004$), and duration of hypertension ($p = 0.009$). Logistic regression confirmed tribe and educational status as significant predictors.

Conclusion: The study revealed suboptimal OH practices and status among hypertensive patients, influenced by education, employment, ethnicity, and duration of hypertension.

Keywords: Hypertension; Oral hygiene; Oral hygiene practices; Periodontal disease

1. Introduction

Hypertension is a serious chronic illness that affects more than a third of the world's population, and a leading risk factor for morbidity and mortality around the globe[1]. Over 50% of premature deaths are attributed to the aftermath of hypertension[2]. In addition to its high morbidity and mortality rate, it also puts a heavy economic burden on families and society[3]. Hypertension is referred to as a "silent killer" because of its lack of initial clinical symptoms in affected patients.

According to WHO, hypertension refers to systolic blood pressure (SBP) ≥ 140mmHg and/or diastolic pressure (DBP) ≥ 90mmHg. Pre-hypertension is described as SBP 120–139mmHg and/or DBP 80–89 mmHg; stage 1 hypertension SBP 140–159 mmHg and or DBS 90-99mmHg; and stage 2 hypertension SBP ≥ 160 and/or DBP ≥ 100[4].

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The prevalence of hypertension is increasing worldwide due to aging, stress, as well as changes in behaviour and lifestyle. About 31.1% of the world's adult population have hypertension; 28.5% and 31.5% in high-income and low- and middle-income countries respectively [5]. The prevalence of hypertension in American adults was put at 45.6% in 2017[6]. In a survey carried out among adults aged 18 years and above in seven communities in Kenya, Nigeria, Tanzania, and Uganda, 25.4% of the participants were found to have hypertension[7].

Periodontal disease is a common oral disease with high prevalence worldwide and is rated as one of the most common diseases in the general population[8]. The main etiologic factor in the development of periodontal disease is microbial plaque causing inflammatory reactions involving the surrounding and supporting tissues of the teeth (gingiva, periodontal ligaments, and alveolar bone). In early stages, periodontal inflammation is completely reversible but when allowed to progress causes tooth loss and may elicit systemic inflammation[9]. To prevent the development of periodontal disease, microbial plaque should be regularly and effectively cleaned from all surfaces of the teeth [10].

Periodontal disease and poor oral hygiene indicators are associated with cardiovascular diseases, including hypertension, stroke, myocardial infarction, and long-term mortality[11]. Some studies have reported an increased risk of developing cardiovascular diseases and heart failure with high number of lost teeth[12,13]. Poor oral health and periodontal disease are regarded as important risk factors associated with increased prevalence of hypertension[14,15]. Most studies have shown that there is a significant positive correlation between periodontal disease and hypertension[16-18]. Arowojolu et al reported a statistically significant relationship between systolic and diastolic blood pressure with oral hygiene index among a group of Nigerian patients undergoing echocardiogram[19]. Periodontal disease, including gum bleeding, gingivitis and periodontitis, may cause systemic inflammation, immunologic reactions, and endothelial dysfunction, resulting in significant impacts on blood pressure (BP) control[20]. Recently, several studies have shown that periodontal treatment is beneficial to control of BP for patients with periodontitis[9,10].

Antihypertensive therapy used to control and prevent complications of hypertension (heart failure, heart attack, renal failure, and stroke) are often associated with side effects, such as xerostomia, gingival overgrowth (GO), salivary gland swelling or pain, lichenoid drug reactions, erythema multiforme, taste sense alteration, and parasthesia[4]. Xerostomia and gingival overgrowth (GO) negatively impact the individual's oral hygiene. Reduced salivary flow in xerostomia (dry mouth) reduced the oral self-cleansing effect and GO causes interference with oral hygiene practice thereby enhancing poor oral hygiene and increased risk of developing periodontal disease[21]. Soroye et al found in their study found a significant relationship between GO and oral hygiene status, hence, suggested that periodontal care be included in the management of hypertensives[22].

The quantity of microbial plaque, the major aetiologic factor associated with the pathogenesis of periodontal diseases is closely related to the frequency of tooth brushing and frequency of professional dental cleaning. Moon et al[23] reported that study participants who brushed their teeth more frequently had lower cardiovascular risk including lower systolic blood pressure[23]. Significant decreases in both mean systolic blood pressure, SBP (175 to 157 mmHg) and mean diastolic blood pressure, DBP (from 105 to 95 mmHg) were observed in response to oral hygiene and periodontal therapy by some researchers[24]. In this study, we investigated the oral hygiene behaviour and status, the result of which will form a database to determine the level of oral health interventions required to boost oral hygiene which may, in turn, reduce the risk and progression of CVDs in this vulnerable population.

2. Methodology

This was a descriptive cross-sectional study conducted among hypertensive patients attending the cardiology clinic of the University of Port Harcourt Teaching Hospital (UPTH)) in South-South, Nigeria. Ethical approval was given by the hospital's ethics committee. The inclusion criteria were dentate patients 18 years and above, diagnosed with hypertension for at least 1 year before the study, who freely gave consent to participate, and who are Nigerians. Patients who had less than 10 teeth in each jaw and those who had undergone any form of periodontal therapy within 6 months before the commencement of the study were excluded from the study.

The formula, $n = \frac{Z^2 P(1-P)}{d^2}$ was used to compute the minimal sample size required. 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 previous study [25]

Z = 1.96 corresponding to 95% confidence level, P = 14% , d = 5% = 0.05

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

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

Two hundred and thirty-six (236) subjects who freely consented and met the inclusion criteria were enrolled to participate in the study.

Data on demographics, hypertension history, home oral hygiene habits (daily tooth brushing frequency, type of toothbrush bristles, interdental cleaning), and dental service utilization were collected via interviewer-administered questionnaires. The hypertension history was confirmed from the patient's medical record. The Simplified Oral Hygiene Index (OHI-S) developed by Greene and Vermillion assessed the level of oral cleanliness. The OHI-S is composed of two indices, debris index (DI-S) and calculus index (CI-S); the summation of which gives the OHI-S score of the individual. Clinical oral hygiene status was categorized based on the OHI-S score into good (0.0 – 1.2); fair (1.3 – 3.0) and poor (3.1 – 6.0).

Procedure

A pretested structured interviewer-administered questionnaire was completed for each participant after obtaining written informed consent. Oral examination was conducted by two dentists with assured inter-examiner reliability using sterile mouth mirrors and WHO probes with the subject sitting comfortably on a chair in a well-lit room to record oral hygiene score.

2.1. Data analysis

The data was recorded and analyzed on IBM SPSS 25. Descriptive analyses i.e. Median, mean, proportion, standard deviation, and frequency were computed. Chi-square tests were performed to assess the association of oral hygiene status with oral hygiene practices and socio-demographic independent variables. A bivariable and a multivariable ordinal logistic regression was performed to identify the factors associated with oral hygiene status. At a 95% confidence interval, statistical significance was set at p-value of < 0.05.

3. Results

The participants' demographics are displayed in Table 1. The age ranged from 22years to 83years with mean age of 55.06 ± 14.17years. Male: Female ratio was 1:1.2 with female preponderance and mean year of hypertension diagnosis of 5.96 ± 8.2years. More than half (55.1%) of the participants had post-secondary education and 78.4% are employed.

Table 1 Characteristics of study participants

Age range: 22years – 83years	
Mean Age: 55.06years ± 14.17	
Variables	**Frequency (%)**
Age group	
18yrs-39yrs	33 (14.0)
40yrs-59yrs	110 (46.6)
≥ 60yrs	93 (39.4)
Gender	
Male	107 (45.3)
Female	129 (54.7)
Marital Status	
Single	20 (8.5)
Married	187 (79.2)

Widower/Divorced/separated	29 (12.3)
Tribe/Ethnicity	
Yoruba	73 (30.9)
Hausa	7 (3.0)
Igbo	95 (40.3)
Others (Rivers, Edo, Delta, Urhobo, Cross-river	61 (25.8)
Educational Status	
None	12 (5.1)
Primary	35 (14.8)
Secondary	59 (25.0)
Post-secondary	130 (55.1)
Employment status	
Employed	185 (78.4)
Unemployed	51 (21.6)
Duration of diagnosis of Hypertension (years)	
<5yrs	77 (32.6)
5yrs-10yrs	82 (34.7)
>10yrs	77 (32.6)

Majority of participants used toothbrush (83.5%) and fluoridated toothpaste (78.4) to clean their teeth with 34.3% brushing twice daily. 60.6% used medium bristled toothbrush with exactly half using a combination vertical and horizontal brushing technique. On self-report, 79.2% of the participants claimed to clean interdentally using various items (dental Floss, Toothpick, Interdental brush and Broomstick). However, it was deduced from the items used that only 16.5% performed interdental cleaning. (Table 2)

Table 2 Oral Hygiene (OH) practices

Variables	**Frequency (%)**
Materials used to clean	
Toothbrush	197 (83.5)
Chewingstick	15 (6.4)
Both (Toothbrush & Chewingstick)	24 (10.2)
What do you use with the material for cleaning?	
Fluoridated toothpaste	185 (78.4)
Herbal toothpaste	36 (15.3)
Charcoal	1 (0.4)
Fluoridated toothpaste & charcoal	1 (0.4)
Nothing	2 (0.8)
Did not specify	11 (4.7)
Frequency of mouth cleaning	
Once	155 (65.7)
Twice or more	81 (34.3)

Brushing Technique	
Horizontal	52 (22.0)
Vertical	56 (23.7)
Horizontal & Vertical	118 (50.0)
Roll	8 (3.4)
Did not specify	2 (0.8)
Brush bristle type	
Soft	59 (25.0)
Medium	143 (60.6)
Hard	31 (13.1)
Did not specify	3 (1.3)
Interdental Cleaning(self-report)	
No	49 (20.8)
Yes	187 (79.2)
Interdental cleaning aid	
Floss	26 (11.0)
Toothpick	145 (61.4)
Interdental brush	6 (2.5)
Broomstick	2 (0.8)
Floss & toothpick	7 (3.0)
Toothpick & broomstick	1 (0.4)
True interdental cleaning (deduced from items used)	
No	197 (83.5)
Yes	39 (16.5)

Figure 1 illustrates the oral hygiene status of participants, categorized into three groups based on their Simplified Oral Hygiene Index (OHI-S) scores. Oral hygiene status was good in 31.4% and poor in 21.1% of the participants.

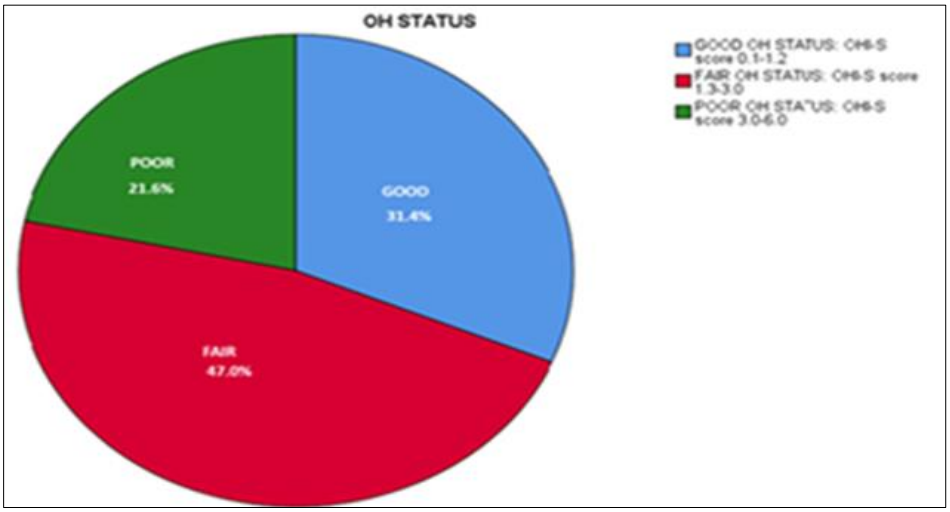

Figure 1 Oral Hygiene Status of Participants

Figure 2 presents the distribution of oral hygiene status across different age groups. In all the age groups, the highest number of participants had fair oral hygiene status.

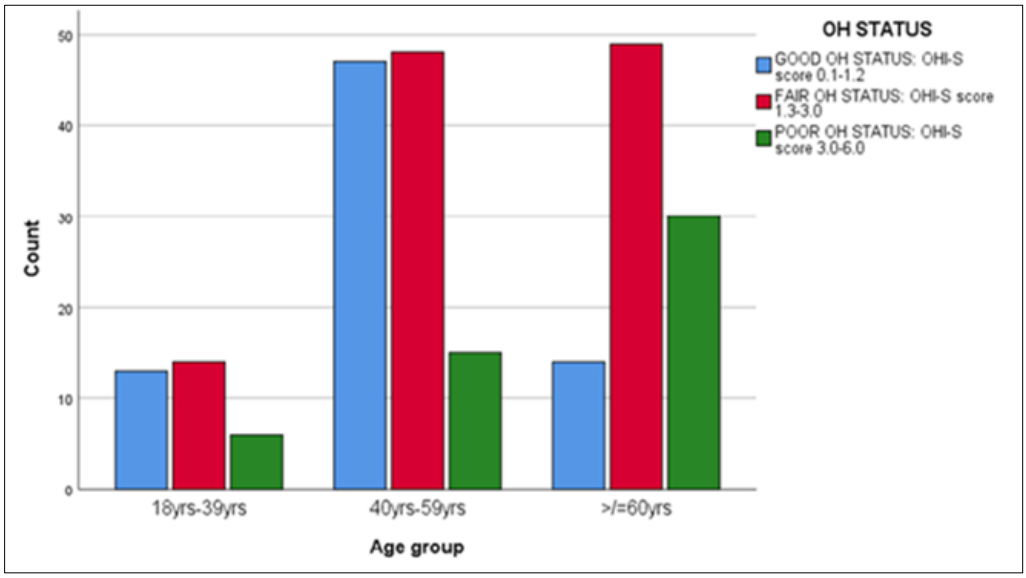

Figure 2 Age Group Distribution of Oral Hygiene Status

The highest number in both males (50; 46.7%) and females (61; 47.2) fell into the fair oral hygiene status. (Fig 3)

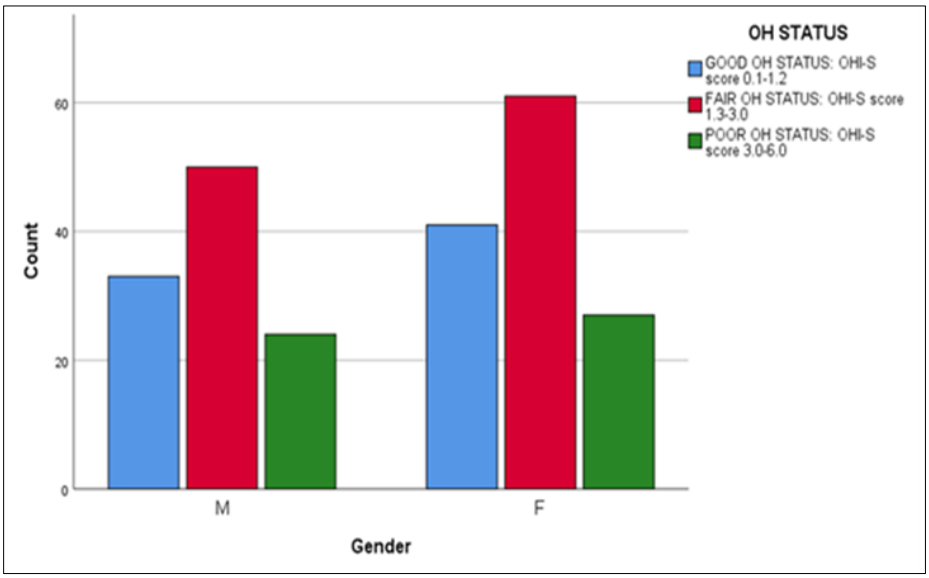

Figure 3 Gender Distribution of Oral Hygiene Status

Table 3 presents the distributions of oral hygiene status according to age group, gender, marital status, tribe/ethnicity, educational status, employment status, previous dental visit, last dental visit, the material used for cleaning, dentifrice used, frequency of cleaning, brush bristle type, brushing technique, interdental cleaning, and hypertension duration. The participants in the age group 40-59 years had better OH (86.4%) while those in the age group ≥60 years had poorer OH (32.2%). The highest proportion of good oral hygiene was observed among participants who were single, of Igbo ethnicity, had post-secondary education, were employed, had visited a dentist within the past year, brushed their teeth twice daily, practiced interdental cleaning, and had been diagnosed less than five years before the study. These differences were significant in the association of OH status with age group ($p = 0.000$), tribe/ethnicity ($p = 0.025$), educational status ($p = 0.043$), employment status ($p = 0.006$), dentifrice used ($p = 0.010$), frequency of mouth cleaning ($p = 0.014$), interdental cleaning practice ($p = 0.004$); and duration of hypertension diagnosis ($p = 0.009$). (Table 3).

Table 3 Oral Hygiene (OH) status and associated factors

Variables	OH Status			Total Freq (%)	p-value
	Good Freq (%)	Fair Freq (%)	Poor Freq (%)		
Overall	74 (31.4)	111 (47.0)	51 (21.6)	236 (100.0)	
Sex					0.970
Male	33 (30.8)	50 (46.7)	24 (22.4)	107 (45.3)	
Female	41 (31.8)	61 (47.3)	27 (20.9)	129 (54.7)	
Age group					0.000*
18yrs-39yrs	13 (39.4)	14 (42.4)	6 (18.2)	33 (14.0)	
40yrs-59yrs	47 (42.7)	48 (43.6)	15 (13.6)	110 (46.6)	
≥ 60yrs	14 (15.1)	49 (52.7)	30 (32.2)	93 (39.4)	
Marital status					0.124
Single	11 (55.0)	5 (25.0)	4 (20.0)	20 (8.4)	
Married	56 (29.9)	91 (48.7)	40 (21.4)	187 (79.2)	
Widower/Divorced	7 (24.1)	15 (51.7)	7 (24.1)	29 (12.3)	
Tribe					0.025*
Yoruba	13 (5.1)	39 (53.4)	21 (28.8)	73 (30.9)	
Hausa	1 (14.3)	3 (42.9)	3 (42.9)	7 (3.0)	
Igbo	38 (40.0)	39 (41.1)	18 (15.8)	95 (40.3)	
Others (Rivers, Edo, Delta, Urhobo, Cross-river)	22 (36.1)	30 (49.2)	9 (14.8)	61 (25.8)	
Educational status					0.043*
None	2 (16.7)	5 (41.7)	5 (41.7)	12 (5.1)	
Primary	5 (14.3)	20 (57.1)	10 (28.6)	35 (14.8)	
Secondary	19 (32.2)	32 (54.2)	8 (13.6)	59 (25.0)	
Post-secondary	48 (36.9)	54 (41.5)	28 (21.5)	130 (55.1)	
Employment status					0.006*
Employed	67 (36.2)	83 (44.9)	35 (18.9)	185 (78.4)	
Unemployed	7 (13.7)	28 (54.9)	16 (31.4)	51 (21.6)	
Previous dental visit					0.196
Yes	41 (37.3)	47 (42.7)	22 (20.0)	110 (46.6)	
No	33 (26.2)	64 (50.8)	29 (23.0)	126 (53.4)	
Last dental visit					0.356
<1 year	13 (46.4)	11 (39.3)	4 (14.3)	28 (25.5)	
2-5 years	22 (40.0)	23 (41.8)	10 (18.2)	55 (50.0)	
>5 years	6 (22.2)	13 (48.1)	8 (29.6)	27 (24.5)	
What you use to clean					0.237
Toothbrush	58 (29.4)	97 (49.2)	42 (21.3)	197 (83.5)	

Chewingstick	4 (26.7)	6 (40.0)	5 (33.3)	15 (6.3)	
Toothbrush & Chewingstick	12 (50.0)	8 (33.3)	4 (16.7)	24 (10.2)	
Dentrifice used					0.010*
Fluoridated Paste	55 (29.7)	94 (50.8)	36 (19.5)	185 (78.4)	
Herbal	14 (38.9)	11 (30.6)	11 (30.6)	36 (15.3)	
Charcoal	1 (100)	0	0	1 (0.4)	
Nothing	0	0	2 (100)	2 (0.8)	
Flouridated Paste & Charcoal	1 (100)	0	0	1 (0.4)	
Frequency of Cleaning					0.014*
Once	41 (26.5)	73 (47.1)	41 (26.5)	155 (66.0)	
Twice	33 (40.7)	38 (46.9)	10 (12.3)	81 (34.3)	
Brush bristle type					0.642
Soft	18 (30.5)	30 (50.8)	11 (18.6)	59 (25.0)	
Medium	45 (31.5)	70 (49)	28 (19.5)	143 (60.6)	
Hard	11 (35.5)	11 (35.5)	9 (29.0)	31 (13.1)	
Brushing Technique					0.803
Horizontal	13 (25.0)	26 (50.0)	13 (25.0)	52 (22.0)	
Vertical	18 (32.1)	25 (44.6)	13 (23.2)	56 (23.7)	
Horizontal & Vertical	39 (33.1)	57 (48.3)	22 (18.6)	118 (50.0)	
Roll	4 (50.0)	3 (37.5)	1 (12.5)	8 (3.4)	
True Interdental Cleaning					0.004*
Yes	21 (53.8)	13 (33.3)	5 (12.8)	197 (83.5)	
No	53 (26.9)	98 (50.5)	46 (23.4)	39 (16.5)	
Hypertension duration					0.009*
<5yrs	35 (45.5)	29 (37.7)	13 (16.9)	77 (32.6)	
5yrs-10yrs	25 (29.4)	39 (47.6)	18 (22.0)	82 (34.8)	
>10yrs	14 (18.2)	43 (55.8)	20 (26.0)	77 (32.6)	

*Significant $p < 0.05$

Table 4 shows the ordinal regression analysis with significant predictors of oral hygiene status: Tribe (Estimate = -0.598, p = 0.001) was a significant predictor of oral hygiene status as well as Educational Status (Estimate = -0.707, p = 0.020)

Table 4 Ordinal Regression Table

		Estimate	**Parameter Estimates**					
			Std. Error	**Wald**	**df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[OHSTATUS = 1]	-5.221	2.775	3.541	1	0.060	-10.660	0.217
	[OHSTATUS = 2]	-2.689	2.722	0.976	1	0.323	-8.024	2.646

Location	Age Group	0.452	0.371	1.481	1	0.224	-0.276	1.179
	Sex	-0.774	0.450	2.960	1	0.085	-1.655	.108
	Marital status	.0705	0.384	3.368	1	0.066	-0.048	1.459
	Tribe	-0.598	0.174	11.793	1	0.001	-0.939	-0.257
	Educational status	-0.707	0.303	5.447	1	0.020	-1.301	-0.113
	Employment Status	-0.278	0.549	0.257	1	0.612	-1.354	0.797
	Visited dentist before	0a	.	.	0	.	.	.
	Last dental visit	0.064	0.317	0.041	1	0.839	-0.557	0.686
	Materials used for clean	0.024	0.415	0.003	1	0.955	-0.790	0.837
	Dentrifice use	-0.783	0.575	1.855	1	0.173	-1.909	0.344
	Frequency of cleaning	-0.727	0.449	2.622	1	0.105	-1.607	0.153
	Brush bristle type	0.167	0.364	0.211	1	0.646	-0.545	0.880
	Brrushing technique	0.167	0.258	0.418	1	0.518	-0.339	0.672
	True interdental cleaning	-1.004	0.568	3.127	1	0.077	-2.117	0.109
	Hypertension duration	-0.117	0.285	0.167	1	0.683	-0.676	0.443

*Significant $p < 0.05$ a. This parameter is set to zero because it is redundant.

4. Discussion

This study assessed the oral hygiene status and practices among hypertensive patients attending a tertiary facility in South-South Nigeria, revealing significant associations between oral health behaviors and demographic factors. Most participants reported using a toothbrush (83.5%) and fluoridated toothpaste (78.4) for cleaning their teeth, a practice that aligns with previous findings in Nigeria.[26-28] However, only 34.3% brushed twice daily, a figure lower than that reported by Alade et al. [29] in another Nigerian population study. This discrepancy may stem from varying levels of awareness, differences in healthcare accessibility, or economic constraints that prevent frequent replacement of oral hygiene products. Thus, it appears that compared to global trends, the frequency of twice-daily brushing among hypertensive patients in Nigeria, as in other demographics, [30] is lower than what has been documented in developed nations, where routine oral hygiene is more integrated into daily self-care regimens. [31,32] Interdental cleaning practices were also explored, with 79.2% of participants stating that they engage in such practices. However, upon closer examination, only 16.5% effectively performed interdental cleaning with appropriate tools such as dental floss or interdental brushes. The use of inappropriate items such as toothpicks and broomsticks, commonly reported in lower-income communities, presents a potential risk for gum damage and periodontal disease.[33] This gap between self-reported and actual practices suggests the need for improved oral health education and public health campaigns targeting proper interdental cleaning techniques.

The findings from this study indicate that individuals with post-secondary education and those who are employed demonstrate better oral hygiene practices compared to their counterparts with lower education levels and those unemployed. This observation aligns with previous research in Nigeria, where oral health literacy and economic capacity directly influence the ability to afford dental visits, toothbrushes, and appropriate dentifrices.[34] The distribution of oral hygiene status among participants showed that 31.4% had good oral hygiene, while 21.6% had poor oral hygiene. The remaining participants (47.0%) exhibited fair oral hygiene, making it the predominant category. The high prevalence of fair oral hygiene suggests a widespread need for improved oral care behaviors and increased accessibility to dental services. Age played a significant role in determining oral hygiene status. Participants aged 40-59 years had the best oral hygiene (86.4%), while those aged 60 years and above exhibited the poorest oral hygiene (32.2% having poor OH). This trend is consistent with other studies, where aging is associated with declining oral health due to factors such as reduced dexterity for brushing, increased likelihood of dry mouth (xerostomia), and a lower tendency to seek regular dental care.[35,36] Older adults are also more likely to have systemic conditions such as diabetes and hypertension, which further exacerbate oral health problems by increasing the risk of periodontal disease and delayed wound healing. Educational attainment was also a critical determinant of oral hygiene status. Participants with post-secondary education had significantly better oral hygiene, underscoring the role of oral health literacy in maintaining good hygiene practices. Studies have shown that individuals with higher levels of health literacy and education are more

likely to understand the implications of poor oral hygiene, actively seek dental care, and use appropriate oral hygiene products. [37,38] Employment status was another key factor influencing oral hygiene. Employed individuals demonstrated better oral hygiene compared to unemployed participants. Financial stability allows for better access to quality oral hygiene products, regular dental check-ups, and professional care when necessary. Conversely, unemployment may limit access to these essential services, leading to poorer oral health outcomes.[39] The role of ethnicity was also highlighted, with the Igbo ethnic group exhibiting the highest proportion of good oral hygiene. Cultural factors may influence oral hygiene behaviors, as some ethnic groups may place greater emphasis on personal hygiene and health maintenance than others.[40] Previous research in Nigeria has also documented ethnic differences in oral hygiene practices, suggesting that targeted educational interventions should consider cultural variations in health behaviors. [41]

The study revealed that participants diagnosed with hypertension for less than five years demonstrated better oral hygiene practices compared to those who had been living with the condition for a longer period. This observation highlights a significant trend in healthcare behavior, where individuals in the early stages of managing a chronic condition, such as hypertension, may still maintain higher levels of preventive health practices, including oral care. The relatively shorter duration of living with hypertension may still allow these individuals to feel more capable of managing both their primary health condition and supplementary aspects of their health, such as maintaining oral hygiene. However, this finding is consistent with a broader body of research that suggests a gradual decline in preventive healthcare behaviors as individuals experience the prolonged burden of chronic illness.[42] As the duration of a chronic illness like hypertension increases, the focus of individuals often shifts primarily toward managing the immediate and critical concerns of the primary condition—such as blood pressure control, medication adherence, and monitoring for potential complications. Over time, this intense focus on managing the primary disease can detract attention to secondary aspects of health, such as oral hygiene, which may be perceived as less urgent or important. Hypertension has however also been linked to several oral health complications, including dry mouth (a side effect of antihypertensive medications), increased risk of periodontal disease, and delayed healing after dental procedures.[43,44] The importance of interdisciplinary collaboration between medical and dental professionals cannot be overstated in managing hypertensive patients' overall health, as regular dental check-ups could help mitigate these risks.

5. Conclusion

This study highlights the oral hygiene status and practices among hypertensive patients in South-South Nigeria, identifying the impact of low educational attainment, unemployment, and tribal affiliations on poor oral hygiene. The OH practices and status of these patients were suboptimal and those that had been hypertensive for over 5 years also had a higher prevalence of poor oral hygiene. The findings emphasize the need for increased oral health awareness, integration of dental care into hypertension management, and the implementation of public health policies to promote oral hygiene. Future research should focus on longitudinal assessments to understand how oral health behaviors evolve among hypertensive patients over time and explore additional barriers to optimal oral hygiene practices.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Written informed consent was obtained from all individual participants included in the study.

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