

## Level of Adherence to the Recommended Biannual Routine Oral Health Visits by the Gweta Population, Botswana

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### Abstract

*This study aimed to evaluate the level of awareness and practice of biannual recommended dental clinic visits among the Gweta village population in Botswana. This was a cross-sectional study. A multivariate analysis was performed utilising binary logistic regression to assess the association between the independent variables under consideration and both awareness and practice of the recommended biannual dental clinic visits (BDCV). Of the 386 participants, one-third (n = 66, 29.7%) were aware of the recommended BDCV, and approximately two-thirds (n = 131, 59.0%) reported attending a dental clinic twice a year. Among those who reported being aware of the recommended BDCV, only 25 (11.3%) implemented the recommendation. More than half (n = 227, 58.8%) of individuals reported good toothbrushing oral hygiene practice, and 288 (74.6%) indicated appropriate toothbrushing oral hygiene frequency (two times per day). One hundred and seventy-seven participants (45.9%) reported good dental hygiene practices. Approximately three in ten (n = 137, 35.5%) individuals reported smoking, whereas six in ten (n = 241, 62.4%) reported using alcohol. There was a significant difference in the percentage of people who identified the importance of oral health for quality of life (94.1% vs. 5.1%, p = 0.009). Individuals who recognised the impact of oral health on quality of life were found to have a threefold higher likelihood of being aware of and adhering to the recommended biannual dental clinic visits (OR = 3.086, 95% CI 1.179–8.077). We propose a health system research project to implement evidence-based health promotion and education programs to improve oral health services and lifestyles.*

**Keywords:** *Awareness and Practice, Botswana, Biannual Dental Clinic Visits, Gweta Village Botswana.*

### Introduction

The World Health Organisation's (WHO) Global Oral Health Status Report (2022) estimated that oral diseases have a significant impact on nearly 3.5 billion individuals globally. [1]. Approximately three-quarters of affected people reside in middle-income nations. [1]. The prevalence of primary oral diseases is on the rise due to shifts in living conditions such as food and beverages that contain high levels of sugar, as well as tobacco and alcohol. The state of oral health serves as a significant determinant of an individual's

general health, well-being, and overall quality of life. [1]. Maintaining oral health is crucial for overall health and well-being throughout one's life. [2]. Good oral hygiene includes brushing teeth with fluorescent toothpaste daily and visiting a dental clinic biannually. [2, 3].

Pierre Fauchard has advocated for six-month recall visits since the 18th century. Several dental and health organisations have agreed to support the six-month recall visit [4, 5]. Furthermore, the International Dental Association (FDI) and the World Health Organisation (WHO) advocate for individuals

to have biannual dental examinations at a dentist's office or an oral health facility [6]. However, some oral healthcare providers still question the two recommended oral healthcare visits due to inequalities in oral healthcare access, which remain low in middle-income countries [7]. Although biannual dental examinations are criticised, there is no evidence to support or refute the practice of encouraging patients to have six-monthly dental checkups [6]. In instances where oral health providers encounter difficulties related to cost-effectiveness and clinical burden, it is advisable to customise the frequency of oral care visits based on each patient's individual oral health needs. This approach involves carefully considering the potential benefits and drawbacks associated with conducting two oral healthcare visits [4]. The determination of the optimal frequency for recalling patients for routine dental check-ups has direct implications for dentists' workloads and can potentially influence both healthcare expenditures and patient outcomes [6].

Patients' adherence to the recommendation for six-month recall visits varies across settings. According to Woolfolk et al. and Schneider et al., their studies reported high frequencies of six-month recall visits, with seven to eight in ten of the study population in the Detroit Tri-County area in the United States and Switzerland undergoing dental check-ups on an annual basis. [7, 8]. While Kuthy et al. reported a frequency of about six in ten among children [10]. In Africa, we observed very low frequencies of visits. As an illustration, only 14% of adolescents visited a dental professional within the previous two years in Lesotho. [11]. Dental insurance emerged as a prominent factor influencing the frequency of dental care visits; in a report, children with dental insurance were four times more likely to have visited a dental clinic in comparison to those without such coverage. [12]. Factors that are associated with infrequent dental checkups include gender (being male), lower income, a lack of a regular

dental care provider, and dental anxiety. [8]. Schneider et al. found that there was a notable disparity in the reporting of these visits between women and men. Specifically, women reported these visits at a significantly higher rate of 78.2%, while men reported them at a comparatively lower rate of 21.2% [9]. People in low- and middle-income countries use less fluoride paste. In Burkina Faso's urban and rural areas, only 12% of people aged 12 years and 18% of people aged 35-44 years used fluoride paste, according to Varenne et al. [13].

Research on how closely adults in rural Africa adhere to the recommendation of attending free six-month recall visits, as is the case in Botswana, is scarce. We aimed to evaluate the level of awareness and practice of biannual recommended dental clinic visits among the Gweta village population. We hypothesised that there is a relationship between awareness and practice of biannually recommended dental clinic visits, demographic factors, and good oral health habits.

## **Methods**

### **Study Design, and Period**

The study was a cross-sectional study that was conducted in one one-month period between Jan 31st and Feb 28<sup>th</sup>, 2022.

### **Study Setting**

We conducted the study in Gweta village, located in the central Tutume district of Botswana. According to the 2011 census, the village had 5529 residents. [14]. Dentists and oral health personnel are located at the village's Gweta Primary Hospital. The team coordinates oral health education and promotion once a quarter at the hospital's outpatient department and once a year during Oral Health Day celebrations in the village. Additionally, the team implements dental health promotion and education during quarterly school visits, aiming to acquaint and motivate students about the importance of maintaining good oral hygiene, a balanced diet, and appropriate conduct.

## Sample Size

We determined a sample size of at least 385 participants using the Cochran formula. [15],

$$n_0 = \frac{z^2 pq}{e^2}$$

Where  $e$  represents the desired level of precision (with a margin of error of 0.5),  $p$  (estimated proportion of the population) is equal to 0.5,  $q$  is  $1 - p$ , and the  $z$ -value chosen for a 95% confidence interval was 1.96.

## Selection of Participants and Inclusion Criteria

The study population consisted of adults aged 18 and older who had resided in Gweta for a minimum of six months. We employed a systematic random sampling technique to choose every 14<sup>th</sup> possible participant in the village, also considering a gender ratio of 1:1. We determined this by dividing the village population by the ratio of 5529 to 385. The selection process began at a randomly chosen position, referred to as the blind point, within the village. If the potential participants declined to participate, we chose the next person in line.

## Data Collection

We conducted a survey that included demographic information such as age, gender, education level, marital status, and employment status. Additionally, we collected information about the recommended biannual dental clinic visits to increase awareness, practice, and oral hygiene habits.

To inquire about health-seeking behaviour at a dental clinic, we used a five-option answer that included the following options: We asked about the frequency of dental clinic visits: (i) once every three months, (ii) every six months, (iii) once a year, (iv) every two years, and (v) other (please define). We defined the dichotomic variable "recommended biannual dental clinic visits' awareness" as those who answered every six months (yes) versus the rest of the group (no). Also, we inquired about how frequently they visited a dental clinic using the

following options: (i) once every three months, (ii) every six months, (iii) once a year, (iv) every two years, (v) never, or (vi) other (please specify). We defined the dichotomic variable "recommended biannual dental clinic visits' practice" as those who answered that they visit a dental clinic every six months (yes) versus the rest of the group (no). Furthermore, we defined the dichotomic variable "recommended biannual dental clinic visits' awareness and practice" as those who answered that they were aware of the recommended biannual dental visit and visited a dental clinic biannually (yes) versus the rest of the group (no).

We asked participants about their views on when someone should visit a dentist clinic; they had four options to choose from: before, during, or after experiencing a dental problem, or any other (to specify).

We assessed the participants' oral hygiene practices, which included their tooth brushing frequency, brushing techniques, and dental cleaning tools used. We inquired about what they use to brush their teeth, offering four options for mouth cleaning: (i) toothbrush with fluoride toothpaste and water; (ii) toothbrush with non-fluoride toothpaste and water; (iii) toothbrush with water only; and (iv) mention additional methods. We defined the dichotomic variable "good toothbrushing oral hygiene practice" as those who answered that they use toothbrushes with fluoride toothpaste and water (yes) versus the rest of the group (no).

We evaluated the frequency at which they engage in tooth brushing; answers were in three options to choose from: (i) once daily, (ii) twice daily, and (iii) other. The dichotomic variable "appropriate toothbrushing oral hygiene frequency" was defined as those who answered that they brush their teeth twice daily (yes) versus the rest of the group (no).

We asked if they chose to brush their teeth in the morning, evening, both, or another time.

The dichotomic variable "good oral hygiene habits" was defined as those who answered that they use toothbrushes with fluoride toothpaste

and water and brush their teeth twice daily (yes) versus the rest of the group (no).

When asked where they first go when they have dental problems, respondents selected the following: (i) dentist, (ii) medical officer, (iii) pharmacist, and (iv) traditional doctor.

We assessed the social risk factors and behaviours associated with oral cancer, including tobacco use and other alcohol use. We further assessed the extent of awareness regarding the relationship between oral health and quality of life (QOL).

### **Data Analysis**

We summarised the data using the mean  $\pm$  standard deviation for variables that follow a normal distribution, the median  $\pm$  interquartile range for skewed variables, and the frequency expressed as percentages for binomial variables.

We did a bivariate analysis using the chi-square or Fisher Exact test when the cells of a contingency table are below 5 or below 10 when there is only one degree of freedom to look for possible links between "awareness and practice of recommended six-month recall visits" and demographic factors, good toothbrushing habits, the right amount of time spent brushing teeth, smoking and drinking, and knowing that oral health affects quality of life.

Additionally, we performed a multivariate analysis using binary logistic regression to evaluate the degree of association between the independent variables under consideration and both awareness and practice of the recommended six-month recall visits. We assessed the strength of the relationship by calculating the adjusted odds ratio (AOR) and 95% confidence intervals (CI).

We analysed the data with IBM SPSS version 29.0.0.0 (241). We set the significance level at less than 0.05.

### **Validity and Reliability**

One month before the actual data collection, we conducted a pilot study and recruited 40 individuals, accounting for ten per cent of the total number of participants required for the study. We conducted this pretest among volunteers in Gweta village, Kgotla. It focused on determining the participants' understanding of the questions, whether they were clear, direct, and concise enough, and any improvements to the questionnaire based on their feedback.

The questionnaire was from English to Setswana, the local language, by someone with language expertise, as the questionnaire was administered in Setswana.

### **Ethical Considerations**

The Botswana Ministry of Health, Health Research and Development Division (HPRD: 6/14/1) granted ethics approval. We asked each consenting participant to sign a written consent form.

### **Results**

Table 1 presents the sociodemographic characteristics of the Gweta villagers who participated in the research. One hundred and one (49.5%) of the 386 participants were male. Young adults aged between 25 and 44 years comprised approximately two-thirds of the participants; 110 individuals (28.5%) were between the ages of 25 and 34, and an additional 110 individuals (28.5%) were between the ages of 35 and 44.

Overall, three-quarters of the participants completed at least junior secondary school. Out of all the participants, 38.1% completed junior secondary school, 35.0% completed senior secondary school, and 12.4% completed tertiary education. Only 54 individuals (14.0%) out of the total participants reported having formal employment. In contrast, most participants (n = 332, 86.0%) claimed being jobless or not having formal employment.

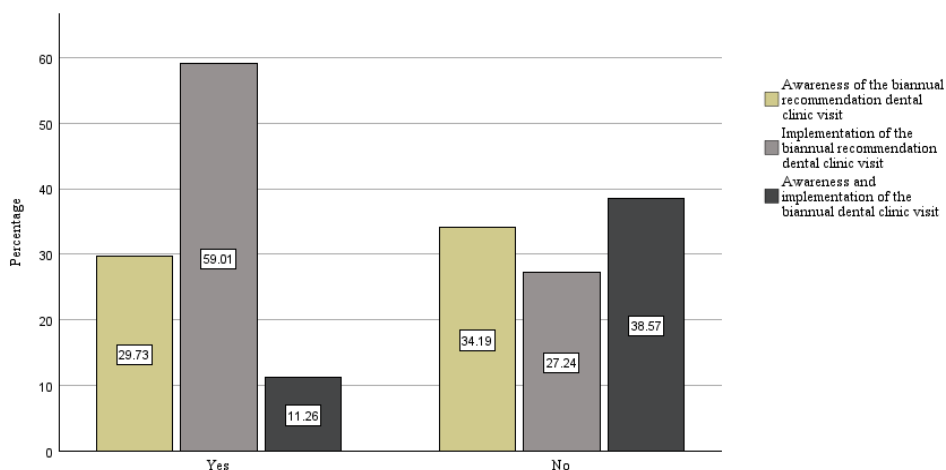
**Table 1.** Sociodemographic Characteristics of Gweta Village Participants, 2022

		Gender		Total
		Male	Female	
		<i>n</i> = 191 (49.5 %)	<i>n</i> = 195 (50.5 %)	<i>n</i> = 386 (100%)
Age group	18–24	25 (13.1)	33 (16.9)	58 (15.0)
	25–34	45 (23.6)	65 (33.3)	110 (28.5)
	35–44	63 (33.0)	47 (24.1)	110 (28.5)
	45–64	43 (22.5)	40 (20.5)	83 (21.5)
	≥65	15 (7.9)	10 (5.1)	25 (6.5)
Educational Level	Non-formal	2 (1.1)	2 (1.0)	4 (1.0)
	Preschool	0 (0)	1 (0.5)	1 (0.3)
	Primary	30 (15.7)	14 (7.2)	44 (11.4)
	Junior Secondary	72 (37.7)	75 (38.5)	147 (38.1)
	Senior Secondary	61 (31.9)	74 (38.0)	135 (35.0)
	Tertiary	26 (13.6)	29 (14.9)	48 (12.4)
Occupation	Unemployed	166 (86.9)	166 (85.1)	332 (86.0)
	Employed	25 (13.1)	29 (14.9)	54 (14.0)

Figure 1 provides the frequency of awareness and implementation of recommended biannual dental clinic visits. Of the participants, one-third (*n* = 66, 29.7) were aware of the recommended biannual dental clinic visits, and approximately two-thirds (*n* = 131, 59.0%) reported attending a dental clinic twice a year. Among those who reported being aware of the recommended biannual dental

clinic visit, only 25 (11.3%) implemented the recommendation.

Most (*n* = 334, 86.5%) of the participants responded that one should attend a dental clinic only while experiencing a dental problem and only 27 (7.0%) responded that one should visit a dental clinic before experiencing any dental problems.



**Figure 1.** Frequency of Awareness and Implementation of Recommended Biannual Dental Clinic Visits Among Gweta Villagers' Participants, 2022

Table 2 summarises the frequency of oral health behaviours and lifestyles about awareness and adherence to the prescribed biannual dental checkups. More than half (n = 227, 58.8%) of individuals reported good toothbrushing oral hygiene practice, and 288 (74.6%) indicated appropriate toothbrushing oral hygiene frequency (two times per day). One hundred and seventy-seven participants (45.9%) reported good dental hygiene practices.

Approximately three in ten (n = 137, 35.5%) individuals reported smoking, whereas six in

ten (n = 241, 62.4%) reported using alcohol. Most participants (n = 336, 87.0%) acknowledged the importance of dental health for QOL. However, only a minority of participants (n = 17, 5.1%) recognised the importance of oral health to QOL and followed through on the suggested biannual dental clinic visits. There was a significant difference in the percentage of people who identified the importance of oral health for quality of life (94.1% vs. 5.1%, p = 0.009).

**Table 2.** Frequency of Oral Health Habits and Lifestyles Among Gweta Villagers' Participants, 2022

		Awareness and implementation of the recommended biannual visits to the dentist		Total n = 386 (100%)	p-value
		No n = 361 (93.5%)	Yes n = 25 (6.5%)		
Good toothbrushing oral hygiene practice	No	148 (93.1)	11 (6.9)	159 (41.2)	0.768
	Yes	213 (93.8)	14 (6.2)	227 (58.8)	
Appropriate toothbrushing oral hygiene frequency	No	87 (88.8)	11 (11.2)	98 (25.4)	0.27
	Yes	274 (95.1)	14 (4.9)	288 (74.6)	
Good oral hygiene habits	No	192 (91.9)	17 (8.1)	209 (54.1)	0.212
	Yes	169 (95.5)	8 (4.5)	177 (45.9)	
Smoking	No	235 (94.4)	14 (5.6)	249 (64.5)	0.391
	Yes	126 (92.0)	11 (8.0)	137 (35.5)	
Alcohol use	No	135 (93.1)	10 (6.9)	145 (37.6)	0.832
	Yes	226 (93.8)	15 (6.2)	241 (62.4)	
Aware that oral health influences QoL <sup>a</sup>	No	42 (84.0)	8 (16.0)	50 (13.0)	0.009*
	Yes	319 (94.9)	17 (5.1)	336 (87.0)	

<sup>a</sup>Quality of Life. \*Statistically Significant.

We conducted a logistic regression analysis to assess how factors such as gender, age group, education level, employment status, good oral hygiene habits, alcohol consumption, smoking, and awareness of the impact of oral health on quality of life affect the awareness and practice of recommended biannual dental clinic visits (Table 3). The total model demonstrated no statistical significance compared to the null model, with a chi-square value of 9.894 and a p-value of less than 0.273. The model explained 6.6% of the variation in how often people knew

about and went to the dentist twice a year, as measured by Nagelkerke R<sup>2</sup>, and it correctly predicted 0% of cases. The p-values over 0.05 indicate that factors such as gender, age group, education level, employment, good oral habits, alcohol use, and smoking did not influence the participants' awareness and practice of recommended biannual dental clinic visits.

However, only the recognition that oral health has an impact on quality of life was significant (p = 0.22). We found that individuals who recognised the impact of oral

health on quality of life were three times more likely to be aware of and adhere to the

recommended biannual dental clinic visits (OR = 3.086, 95% CI 1.179–8.077).

**Table 3.** Multivariate Logistic Regression Analysis, Oral Health Habits and Lifestyles Among Gweta Villagers' Participants, 2022

		<b>B<sup>b</sup></b>	<b>Wald Chi-square</b>	<b>p-value</b>	<b>AOR<sup>c</sup></b>	<b>AOR 95% C.I.<sup>d</sup></b>
<b>Step 1<sup>a</sup></b>	Gender (male)	.309	.501	.479	1.362	.579–3.207
	Age group	-.153	.570	.450	.858	.577–1.276
	Educational Level	.064	.073	.787	1.066	.670–1.695
	Employed (yes)	-.380	.476	.490	.684	.232–2.012
	Good Oral Hygiene Habits (yes)	.333	.477	.490	1.395	.542–3.588
	Alcohol Use (yes)	.114	.059	.808	1.121	.448–2.806
	Smoking (yes)	-.307	.444	.505	.736	.298–1.814
	Aware that Oral Health Influences QoL (yes)	1.127	5.270	.022*	3.086	1.179–8.077
	Constant	-2.693	2.874	.090	.068	

<sup>a</sup>Variable(s) Entered on Step 1: Gender, Age Group, Educational Level, Employment, Good Oral Hygiene, Alcohol, Smoking, and Aware that Oral Health Influences QoL; <sup>b</sup>Estimated Coefficient; <sup>c</sup>Adjusted Odd Ratio; <sup>d</sup>95% Confident Interval; <sup>e</sup> QoL, Quality of Life; \*Statistically Significant

## Discussion

This study investigated the awareness and implementation of the recommended biannual dental clinic visits among the Gweta village population. The current study revealed that, despite receiving regular health education from the Gweta oral health team and three-quarters having at least a junior secondary school education, one-third (29.7) were aware of the recommended biannual dental clinic visits, and almost two-thirds (59.0%) reported visiting a dental clinic twice a year, as advised by the FDI and the WHO. Only 11.3% of those who reported knowing about the suggested biannual dental clinic visit followed through on the advice. Most participants (86.5%) said they should only go to a dental clinic if they had a dental condition. It is reasonable to anticipate a high rate of biannual dental visits among this cohort. The Botswana Essential Health Service Package for oral health specifies that the Basic Primary Oral Health Care Services provided at the clinical level should include, at the very least, oral health promotion and prevention

services. These services encompass oral health education, tooth-brushing programs, fluoride mouth rinsing programs, fissure sealant applications, and topical fluoride applications. [16]. The approach to oral health promotion may vary across individuals depending on their oral health status and the existence of any underlying variables such as medical diseases, lifestyle, and socioeconomic background. Therefore, one needs to develop specific oral health messages. We expect a significant number of Gweta people to seek oral health services, including preventive measures, given the availability of free oral health care in Botswana. There is an increasing acknowledgement that simply providing information and knowledge to individuals is not enough to effectively encourage behaviour change. The local community's specific dynamics and needs are taken into account when implementing healthcare delivery techniques. [17].

The results of this study showed that 58.8% of individuals reported that they practised good

oral hygiene with their toothbrush, 74.6% mentioned that they used their toothbrush twice daily, and 45.9% reported practising good dental hygiene. The result was comparable to that of Varenne et al., who reported that 74.5% of their Burkinabè participants adhered to the recommended brushing regimen of twice-daily brushing. Nevertheless, our investigation identified a significantly higher percentage of individuals (58.8%) who employed toothbrushes, fluoride toothpaste, and water to brush their teeth, in contrast to Burkinabè participants, who used fluoride toothpaste at a rate of only 32.5% among individuals aged 18 and older. [13]. Even though the level of awareness of the two recommended routine oral health care visits per year was low in general, participants had good knowledge and practice of good oral hygiene. This could be attributed to the participants' educational background, as they have completed at least junior secondary school. Botswana has successfully attained universal access to elementary education, which presently encompasses a ten-year basic education system. [18].

In the current study, the percentage of individuals who reported smoking was approximately three in ten (35.5%), while six in ten (62.4%) reported using alcohol. Most participants (87.0%) acknowledged the significance of dental health for QOL. Nevertheless, only a small proportion of participants (5.1%) acknowledged the significance of oral health in their QOL and implemented the recommended biannual dental clinic visits. The percentage of individuals who recognised the significance of oral health for QOL varied significantly ( $p = 0.009$ ), and individuals who acknowledged the influence of oral health on QOL were three times more likely to be aware of and adhere to the recommended biannual dental clinic visits (OR = 3.086, 95% CI 1.179–8.077). Individuals who smoke have a higher percentage compared to the global average of 23.6%. A recent systematic review discovered that tobacco

smoking increases periodontitis by 85% [17], and there is a significant association between tobacco use and mucosal lesions. Alcohol has a trifold effect on oral health. [19]. There is now widespread acknowledgement that oral diseases can have diverse effects on individuals and their overall health and QOL. [20, 21]. The significant prevalence of risky lifestyles among participants in this study would necessitate more efficient health education for individuals and communities. In this study, we did not analyse alcohol consumption in a way that distinguishes people who engage in abusive behaviour.

Botswana district health teams should extend oral health promotion to diverse demographics to enhance their oral health and overall welfare. The requirements for promoting oral health may vary across individuals depending on their oral health state, the existence of any underlying variables such as medical problems, lifestyle style (smoking and alcohol misuse), and sociodemographic factors. Therefore, the development of specific oral health messages and biannual check-ups, independent of any existing oral health issues, are key components of promoting oral health. The patient's attitude and dedication to oral health are critical, as they will influence their long-term perspective and commitment to maintaining oral cleanliness.

We propose a health system research project that aims at implementing evidence-based health promotion and education programs to improve oral health services and lifestyles.

## **Conclusion**

This study investigated the awareness and implementation of the recommended biannual dental clinic visits among the Gweta village population. Despite receiving regular health education from the Gweta oral health team and three-quarters having at least a junior secondary school education, one-third (29.7) were aware of the recommended biannual dental clinic visits, and almost two-thirds (59.0%) reported visiting a dental clinic twice a year, as advised



by the FDI and the WHO. Also, approximately half (45.9%) of participants reported practising good dental hygiene. Considering participant's lifestyles, approximately three in ten (35.5%) reported smoking, while six in ten (62.4%) reported using alcohol. Individuals who acknowledged the influence of oral health on QOL were three times more likely to be aware of and adhere to the recommended biannual dental clinic visits. We propose a health system research project that aims at implementing evidence-based health promotion and education

## References

- [1]. World Health Organisation, 2022, Global Oral Health Status Report: Towards Universal Health Coverage for Oral Health by 2030.
- [2]. Dosumu, T. O., Betiku, A., Ademuyiwa, G., Olabisi, O., Adebisi, T., & Oyekale, R., 2022, Oral Hygiene Practices and Factors Influencing the Choice of Oral Hygiene Materials Among Undergraduates in Selected Universities in Osun State, Nigeria, *Journal of Pre-Clinical and Clinical Research*, 16(4), 137–142.
- [3]. Umanah, A., Braimoh, O., 2017, Oral Hygiene Practices and Factors Influencing the Choice of Oral Hygiene Materials Among Undergraduate Students at the University of Port Harcourt, Rivers State, Nigeria, *Journal of Dental and Allied Sciences*, 6, 3.
- [4]. Anthonappa, R., King, N., 2008, Six-Month Recall Dental Appointments, for all Children, are (un)Justifiable, *Journal of Clinical Pediatric Dentistry*, 33(1), 1–8.
- [5]. Amarasena, N., Luzzi, L., Brennan, D., 2023, Effect of Different Frequencies of Dental Visits on Dental Caries and Periodontal Disease: A Scoping Review, *International Journal of Environmental Research and Public Health*, 20(19), 6858.
- [6]. Fee, P. A., Riley, P., Worthington, H. V., Clarkson, J. E., Boyers, D., & Beirne, P. V., 2020, Recall Intervals for Oral Health in Primary Care Patients, *Cochrane Database of Systematic Reviews*, 2020 (10).
- [7]. Glick, M., da Silva, O. M., Seeberger, G. K., Xu, T., Pucca, G., Williams, D. M., Séverin, T.,

programs to improve oral health services and lifestyles.

## Conflict of Interest

There was no conflict of interest. This study was funded by the authors.

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- 2012, FDI Vision 2020: Shaping the Future of Oral Health, *International dental journal*, 62(6), 278.
- [8]. Woolfolk, M. W., Lang, W. P., Borgnakke, W. S., Taylor, G. W., Ronis, D. L., Nyquist, L. V., 1999, Determining Dental Checkup Frequency, *The Journal of the American Dental Association*, 130(5), 715–723.
- [9]. Schneider, C., Zemp, E., & Zitzmann, N. U., 2019, Dental Care Behaviour in Switzerland. *Swiss Dent J*, 129(6), 466–478.
- [10]. Kuthy, R. A., Kavand, G., Momany, E. T., Jones, M. P., Askelson, N. M., Chi, D. L., Damiano, P. C., 2013, Periodicity of Dental Recall Visits for Young Children First Seen in Community Health Centers. *Journal of Public Health Dentistry*, 73(4), 271–279.
- [11]. Jessani, A., Quadri, M. F. A., Lefoka, P., El-Rabbany, A., Hooper, K., Lim, H. J., Laronde, D. M., 2021, Oral Health Status and Patterns of Dental Service Utilisation of Adolescents in Lesotho, Southern Africa, *Children*, 8(2), 120.
- [12]. Sohn, W., Ismail, A., Amaya, A., & Lepkowski, J., 2007, Determinants of Dental Care Visits Among Low-Income African-American Children. *The Journal of the American Dental Association*, 138(3), 309–318.
- [13]. Varenne, B., Msellati, P., Zoungrana, C., Fournet, F., & Salem, G., 2005, Reasons for Attending Dental-Care Services in Ouagadougou, Burkina Faso, *Bulletin of the World Health Organisation*, 83(9), 650–655.
- [14]. Yumpu.com. (n.d.). 2011, Population and Housing Census. *Yumpu.Com*. Retrieved, 2024,

from

<https://www.yumpu.com/en/document/view/63039123/2011-population-and-housing-census>

[15]. Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C., (n.d.). Organisational Research: Determining Appropriate Sample Size in Survey Research.

[16]. Botswana Ministry of Health, 2010, Botswana Essential Health Services Packages.

[17]. MacKian, S., n. d. A review of Health Seeking Behaviour: Problems and Prospects. University of Manchester, Health Systems Development Programme.

[18]. Hanemann, U., 2006, Literacy in Botswana. Paper Commissioned for the EFA Global Monitoring Report.

[19]. FDI World Dental Federation, 2024, Alcohol as a Risk for Oral Health, *International Dental Journal*, 74(1), 165–166.

[20]. Baiju, R., Peter, E., Varghese, N., & Sivaram, R., 2017, Oral Health and Quality of Life: Current Concepts, *Journal of Clinical and Diagnostic Research : JCDR*, 11(6), ZE21–ZE26.

[21]. Yap, A., 2017, Oral Health Equals Total Health: A Brief Review, *Journal of Dentistry Indonesia*, 24(2), 59–62.