

Gingival Bleeding Awareness among Nigerians attending a Tertiary Hospital in South-South Nigeria

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DOI: [10.36348/sjodr.2020.v05i01.011](https://doi.org/10.36348/sjodr.2020.v05i01.011)

| Received: 13.01.2020 | Accepted: 20.01.2020 | Published: 27.01.2020

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Abstract

Introduction: Gingival bleeding is one of the cardinal signs of inflammatory gum disease which if untreated can lead to periodontal disease and eventual tooth loss. This study assessed the knowledge and clinical presentation of inflammatory gum disease among Nigerians in the South-South geopolitical zone. **Methods:** Self-administered questionnaires were filled by all consenting patients that attended the Oral Diagnosis Clinic of the University of Port Harcourt Teaching Hospital between May and July 2017. Information elicited were socio-demographics, knowledge on causes and sequelae of gingival bleeding. Indices used were Gingival Index (GI), Sulcular Bleeding Index (SBI) and Simplified Oral Hygiene Index (OHI-S). Data was analyzed using epi-info and level of significance was set at ≤ 0.05 . **Results:** 308 participants were recruited with M: F ratio of 1:1.3 and mean age of 34.2(± 13.4) years. Two-fifth (42.1%) had gingival bleeding while brushing. Though 51 (36.4%) knew gingival bleeding is abnormal, more than half [35(59.3%)] did not know what caused their bleeding. Some reasons given for gingival bleeding while brushing were dental infection [10 (17.0%)] and hard bristled toothbrushes [98 (13.6%)]. Majority [234(70%)] didn't know the sequelae of untreated gingival bleeding. Clinical examination showed 76(24.7%) had halitosis, 101(32.8%) bled on probing. 131(42.5%) had a gingival index of 2. Mean MGBI and OHI-S were 1.16(± 0.9) and 1.74(± 0.9) respectively. 33(10.7%) participants had poor oral hygiene. **Conclusion:** The participants had a poor knowledge of inflammatory gum diseases. There is the need to increase awareness among the populace and encourage prompt treatment thereby reducing its avoidable sequelae like tooth loss. **Keywords:** Gingival bleeding, Tooth brushing, Knowledge, Bleeding on probing, Awareness, inflammatory gum disease.

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INTRODUCTION

Periodontal diseases are regarded as one of the two major oral health problems worldwide [1, 2] the gingiva is that part of the periodontal supporting tissue that snugly encircles the cervical part of the teeth and extends to the oral mucosa [1, 2]. Inflammation of the gingiva; gingivitis, is commonly caused by poor oral hygiene, though other factors [2-5] such as trauma, medications, systemic conditions such as leukemia, sex hormones and smoking are known causes.

Dental plaque is a biofilm that accumulates on teeth and hard surfaces in the oral cavity [6]. It is the primary cause of periodontal disease, which is both an infectious and inflammatory disease. Gingivitis is the mildest form of periodontal disease and manifests as redness, swelling, tenderness and bleeding [6]. It usually precedes periodontitis; however, it does not always progress to periodontitis [7]. In children,

gingivitis is caused by plaque accumulation around the cervical part of the teeth and the amount of plaque is related to frequency of tooth cleaning and diet [8-10]. Dental plaque accumulation can be controlled by good oral hygiene practices such as access to the right tooth cleaning materials, awareness of frequency of cleaning the oral cavity and the knowledge and practice of the right tooth cleaning techniques.

Gingival bleeding has much possible aetiology such as drugs, pregnancy, systemic conditions like leukemia, bleeding and platelet disorders, direct trauma, bacterial, fungi and viral infections [11-13].

Gingival bleeding during tooth brushing is an indication of an active ongoing gingivitis. The awareness of this mild form of periodontal disease is necessary so the individual affected can seek prompt treatment and avoid its progression to periodontitis; the inflammation of the periodontal supporting tissues

(periodontal ligament, alveola bone and cementum) if left untreated leading to tooth mobility and eventual tooth loss [14-17]. Thus, it is necessary to increase the knowledge of the populace as regards the cardinal signs of gingivitis, one of which is gingival bleeding and thus, avoid its sequelae. This study evaluated the knowledge and clinical presentation of inflammatory gum disease among patients in a Tertiary Hospital in Niger Delta region of Nigeria.

METHODOLOGY

This is a cross sectional study involving consecutive consenting adults and adolescents without known systemic conditions and chronic periodontitis that attended the Oral Diagnosis Clinic of the University of Port Harcourt Teaching Hospital, Port Harcourt between May and July 2017

Ethical approval was sought and obtained from the ethics committee of the institution to carry out the study. Consent was also sought and obtained from the subjects after the objective of the study was explained to them.

Structured questionnaires were administered to the participants and information elicited included socio demographic characteristics such as the age as at last birthday, sex, level of education, occupation and ethnic groups of the subjects. Also, the pregnancy status was sought from the females. The questionnaires accessed the history of gum bleeding, knowledge on (i) the cause of the bleeding and (ii) the frequency of gingival bleeding, (iii) sequelae of gingival bleeding.

Clinical examination was carried out using sterile instruments. Bleeding on probing (BOP) was elicited using the Modified Bleeding Index (SBI) by Mombelli, Van Oosten *et al.* where Score 0 – No bleeding when probe is passed along the gingival margin. Score 1 – Isolated bleeding spots visible Score 2 – Blood forms a confluent red line on margins Score 3 – Heavy or profuse bleeding.

Gingiva index (GI) of Leo and St (1963) was used to access the gingival condition and qualitative changes were recorded scoring 0-3 where 0 was normal gingival, 1= mild inflammation, 2= moderate inflammation and 3= severe inflammation and these were used to determine the prevalence and severity of gingivitis among the participants where 0.1-1.0= mild inflammation, 1.1-2.0= moderate inflammation and 2.1 to 3.0 = severe inflammation

Simplified Oral Hygiene Index (OHI-S) was used to determine the oral hygiene status of the participants scoring 0-1.2 as good, 1.2-3.0; fair and 3.0-6.0 poor oral hygiene respectively. Data was analyzed using epi-info 3.5.1 and level of significance was set at ≤ 0.05 .

RESULTS

Three hundred and eight participants were recruited for this study; of which 18 (5.8%) were adolescents. The Male: Female ratio was 1:1.3. The mean age was 34.2 ± 13.4 years. 221(71.8%) had tertiary education, 99(32.1%) and 120(38.9%) were self-employed and students respectively Table 1.

Table 2 shows the participants' perception of gingival bleeding. 131 (42.5%) participants bled while brushing. Only 21 (6.8%) participants knew bleeding while brushing is abnormal; over half of the participants [162 (52.6%)], did not know. The reasons given by the participants who bled while brushing are age 2(1.5%), use of hard bristled toothbrushes 31 (23.7%). 53 (40.5%) did not have any knowledge of the cause of their gingival bleeding. 125 (40.6%) participants knew that it's abnormal to bleed from the gum while more than half of them 162(52.6%) did not know.

Two hundred and thirty-four (76.0%) of the participants said they did not know the sequelae of untreated gum bleeding while only 32(10.4%) of those 74(24%) who claimed to; actually, knew that periodontal disease and eventual tooth loss are the sequelae. Twenty-nine (9.4%) thought the sequelae was tooth decay, 5(1.6%) weak tooth, 5(1.6%) mouth odour, 23 (7.5%) gingivitis and 9 (2.9%) tooth loss. Only 54(17.5%) of them routinely use mouthwashes Table 2. Fig 1 shows the frequency of gingival bleeding among the participants. 25(8.1%) of them bled every time they brushed.

The clinical examination of the participants showed that 76(24.7%) had halitosis, 101 (32.8%) bled on probing and 207(67.2%) had Gingival Index of 0. The mean gingival index and bleeding on probing were 1.42 ± 1.1 and 1.16 ± 0.9 respectively. The prevalence of self-reported gingival bleeding among the participants was 42.5%. 20(6.5%) had severe gingival inflammation. Participants had a mean OHI-S of 1.79 ± 1.0 . 116 (37.7%) participants had good oral hygiene, 159(51.6%) fair and 33(10.7%) poor oral hygiene Table 3.

Table 4 shows the association between education and the knowledge of the participants about gingival bleeding being abnormal. Statistical analysis showed a statistical significance.

The Analysis of the association between participants' education and knowledge of sequelae of gingival bleeding showed no statistical significance Table 5.

Table 6 shows the association between participants' age and Knowledge of gingival bleeding. Statistical analysis showed no significance.

Table-1: The socio-demographics of the participants

Variable	Frequency	Percentage
Sex		
Male	133	43.2
Female	175	56.8
Age Group		
<20	18	5.8
21-30	116	37.7
31-40	93	30.2
41-50	40	13.0
51-60	18	5.8
>60	23	7.5
Ethnicity		
Yoruba	26	8.4
Igbo	114	37.0
Hausa	6	1.9
South-South	162	52.6
Education		
No formal Education	14	4.5
Primary	9	2.9
Secondary	64	20.8
Tertiary	221	71.8
Occupation		
Self employed	99	32.1
Youth Corpers	2	0.7
Artisans	11	3.6
Civil Servants	16	5.2
Professionals	50	16.2
Retirees	2	0.7
Teachers	8	2.6
Students	120	38.9
Total	308	100.0

Mean age = 34.2± 13.4 years

There was no statistical significance when the participant's sex was crosstab with their knowledge of gingival bleeding. Table 7

Table-2: Participants Prevalence and Perception of Gingival Bleeding

Variables	Frequency	Percentage
Gum Bleeding while Brushing		
Yes	131	42.5
No	177	57.5
Is Gum Bleeding while brushing normal?		
Yes	21	6.8
No	125	40.6
Don't Know	162	52.6
Perceived cause of participant's gum bleeding?		
Age	2	1.5
Dental infection/pain/tooth decay	8	6.1
Poor Oral Hygiene	22	16.8
Use of Hard Tooth brush	31	23.7
Lack of vitamins	2	1.5
Soft/ weakened gum	7	5.4
Gum swelling	2	1.5
Tooth picking	2	1.5
Worm	2	1.5
Don't Know	53	40.5
Total	131	100.0
Is it good to bleed from the gum?		
Yes	2	0.6
No	217	70.5
Don't Know	89	28.9
Routine use of Mouthwash		
Yes	54	17.5
No	254	82.5
Total	308	100.0

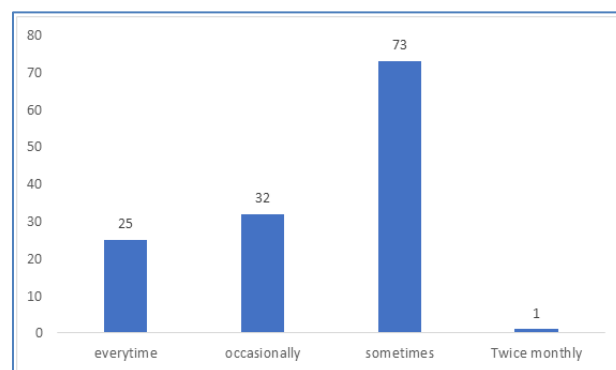


Fig-1: Frequency of gingival bleeding

Table-3: Participants Clinical Profile

Variables	Frequency	Percentage
Halitosis		
Yes	76	24.7
No	232	75.3
Bleeding on Probing (BOP)		
Yes	101	32.8
No	207	67.2
BOP using Modified Gingival Bleeding Index (MGBI)		
0	207	67.2
1	57	18.5
2	25	8.1
3	19	6.2
BOP Mean= 1.16±0.9		
Gingival Index (GI)		
0	193	62.7
0.1- 1.0 (mild inflammation)	55	17.8
1.1-2.0 (moderate inflammation)	40	13.0
2.1-3.0 (severe inflammation)	20	6.5
Mean GI = 1.42±1.1		
Oral Hygiene Index (OHI)		
Good	116	37.7
Fair	159	51.6
Poor	33	10.7
OHI Mean= 1.74±0.9		
Total	308	100.0

Table-4: Association between participants' level of education and knowledge about gingival bleeding

Education	Freq	%	Freq	%	Freq	%	Freq	%	χ^2	df	P
	Yes		No		Don't Know		Total				
	Is bleeding from the gum normal?								23.63	6	<0.0001
No Formal	0	0.0	8	3.7	6	6.8	14	4.6			
Primary	1	50.0	4	1.8	4	4.5	9	2.9			
Secondary	1	50.0	40	18.5	23	25.8	64	20.8			
Tertiary	0	0.0	165	76.0	56	62.9	221	71.7			
Total	2	100.0	217	100.0	89	100.0	308	100.0			

Table-5: Association between participants' level of education and awareness of sequelae of gingival bleeding

Sequelae of gingival bleeding	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	χ^2	df	P
	Level of Education												
	No Formal		Primary		Secondary		Tertiary		Total		50.12	12	0.509
Age	1	16.7	0	0.0	1	3.2	0	0.0	2	1.5			
Toothache	0	0.0	1	14.3	1	3.2	6	6.9	8	6.1			
Poor OH	0	0.0	0	0.0	10	32.3	12	13.8	22	16.8			
Hard TB	3	50.0	1	14.3	4	12.9	23	26.4	31	23.7			
Avitaminosis	0	0.0	0	0.0	0	0.0	2	2.3	2	1.5			
Weakened gum	0	0.0	0	0.0	0	0.0	7	8.1	7	5.4			
Gum swelling	0	0.0	0	0.0	0	0.0	2	2.3	2	1.5			
Tooth picking	0	0.0	0	0.0	1	3.2	1	1.2	2	1.5			
Worm	0	0.0	1	14.3	1	3.2	0	0.0	2	1.5			
Don't Know	2	33.3	4	57.1	13	42.0	34	39.0	53	40.5			
Total	6	100.0	7	100.0	31	100.0	87	100.0	131	100.0			

Table-6: Association between participants' age and awareness of gingival bleeding

Table-6. Association between participants' age and awareness of gingival bleeding											
Age	Freq	%	Freq	%	Freq	%	Freq	%	χ^2	df	P
	Yes		No		Don't Know		Total				
	Is bleeding from the gum normal?								6.25	10	0.794
<19	1	4.8	6	4.8	11	6.8	18	5.8			
20-29	8	38.1	53	42.4	55	34.0	116	37.7			
30-39	5	23.8	39	31.2	49	30.2	93	30.2			
40-49	2	9.5	13	10.4	25	15.4	40	13.0			
50-59	2	9.5	7	5.6	9	5.6	18	5.8			
>60	3	14.3	7	5.6	13	8.0	23	7.5			
Total	21	100.0	125	100.0	162	100.0	308	100.0			

Table-7: Association between participants' sex and awareness of gingival bleeding

Sex	Freq	%	Freq	%	Freq	%	Freq	%	χ^2	df	P
	Yes		No		Don't Know		Total				
	Is bleeding from the gum normal?								3.07	2	0.216
Male	12	57.1	48	38.4	73	45.1	133	43.2			
Female	9	42.9	77	61.6	89	54.9	175	56.8			
Total	21	100.0	125	100.0	162	100.0	308	100.0			

DISCUSSION

Gingival bleeding is an early sign of gingival inflammation and a poor prognosis for patients with periodontitis. Thus, the awareness of this early sign in individuals is paramount in seeking early intervention and in preventing the progression to periodontal diseases if left untreated [14, 15].

The prevalence of self-reported gingival bleeding in this study was 42.5% comparable to studies done in hospitals in Kaurachi, Saudi Arabia and Pakistan that reported a prevalence of 38%, 48.8% and 38% in their studies[16-18] respectively and higher than the studies done in other tertiary hospitals in Nigeria that reported between 12.7 and 28.8%[19-22].

More females participated in this study [F: 175(56.8%), M: 133(43.2%)], similar to the study conducted in Sulaimani [22] among dental students but contrasted with that done in Benin-city Nigeria [3]. More of the participants 209(67.9%) were in the third and fourth decades of life. 221(71.8%) had tertiary education.

42.5% of the participants bled while brushing but only 8.1 % of them bled frequently. A study conducted among university dental undergraduates in Sulaimani[14] reported that 63.3% their participants bled while brushing and 15.7% of those who bled did so frequently. Other studies done in Sudan and Saudi Arabian reported that 42% and 25% of their participants bled frequently while brushing respectively[23, 24].

The perceived cause of gingival bleeding by participants varied. It includes age, dental infection, avitaminosis, worms, and use of tooth pick and softness/weakness of the gum. 16.8%, 23.7% and 6.1% of participants mentioned poor oral hygiene, use of hard toothbrushes and dental infections such as tooth decay.

40% of participants did not know the cause of gingival bleeding. The Sulaimani study [22] recorded participants' perceived causes as being microbial, systemic like drug induced and hormonal e.g. pregnancy induced. The difference in the perceived causes is probably due to the fact that the latter study was conducted among dental undergraduates in the university who have been taught the knowledge of the different aetiology of gingival bleeding.

70% of participants knew it is not normal to bleed from the gum and when statistically analyzed with level of education, this was statistically significant. Their level of education impacted on their awareness that gingival bleeding is abnormal. 28.9% did not know whether it is normal or abnormal.

The mean bleeding on probing was 1.16 ± 0.9 . Twenty (6.5%) had severe gingival inflammation. Participants had a mean OHI-S of 1.79 ± 1.0 . 116 (37.7%) participants had good oral hygiene, 159(51.6%) fair and 33(10.7%) poor oral hygiene.

In conclusion, the prevalence of gingivitis is high among the participants and though a substantial percentage knew it is abnormal to bleed from the gum; over 90% did not know the sequelae of gingival inflammation and may thus not seek early interventions. Thus, this delay in seeking appropriate treatment may invariably result in the progression of the gingival inflammation to periodontitis and eventual tooth loss. There is the need to give oral hygiene instructions to all patients who come to the dental clinics irrespective of their complaints as this will result in an increased awareness of oral health among the populace

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