INTRODUCTION

Gingival bleeding is a prevalent manifestation of periodontal diseases and also results from direct trauma, viral, fungal or bacterial infection, drugs, pregnancy, dermatoses, and systemic conditions. However, persistent gingival bleeding may be due to serious medical conditions such as leukemia and bleeding and platelet disorders.

Gingivitis is pink and firm, tapered contoured tissue surrounding the teeth which in health does not bleed on probing and tooth brushing. Gingival bleeding occurs mainly due to inadequate plaque removal which results in the thinning, ulceration, necrosis of gingival epithelia coupled with engorgement of blood vessel. Gingival bleeding on tooth brushing is a form of provoked gingival bleeding, a vital feature and probably one of the most frequent complaints among patients with periodontal disease. Gingival bleeding occurs alongside other manifestations of periodontal diseases like gingival swelling, halitosis, food packing, pain, gingival recession, and tooth mobility. The blood from gingival bleeding may be tasted and smelt on the affected individual’s breath reflecting its association with dysgeusia and halitosis. Gingival bleeding is so common that it is not given serious attention and even considered as normal among Nigerians and Chinese immigrants in Montreal despite being an indicator of pathology. A study showed that gingival bleeding was not perceived as an indicator of inflammatory disease thus hindering the propensity to seek professional care. In hospital-based studies in South-West and South-East regions of Nigeria, the prevalence of gingival bleeding were reported as 25% and 28.8% respectively.

Although, the prevalence of gingival bleeding can be assessed objectively by bleeding on probing (BOP), the
subjective assessment using gingival bleeding on tooth brushing has been significantly correlated with BOP and clinical findings of bleeding. Authors have considered self-reported gingival bleeding, a useful method for monitoring the gingival health of populations during clinical or group oral health promotion aimed at enhancing periodontal awareness. The objective of the study was to determine the relationship that exists between self-reported gingival bleeding, oral health perception, practices and concerns.

**MATERIALS AND METHODS**

This cross-sectional survey among undergraduate of University of Benin, Benin City, Nigeria was conducted between April and May 2011. All undergraduate students undergoing their academic pursuit in the Ugbowo campus of University of Benin except dental and medical students and students with diagnosed systemic disease were included in the study. A self-administered 21-item structured questionnaire in English language was used for data collection. The questionnaire elicited information on demography (age and gender), perceived dental and gingival health, dentist visit, tooth brushing, worry about symptoms of oral diseases, satisfaction with the appearance of teeth, and smoking behaviors. Perceived dental and gingival health was each assessed using the single-item global oral health-rating question. “How would you describe the health of your teeth” and “how would you describe the health of your gum” The responses were excellent, good, fair or poor. The remaining 17 questions which assessed dentist visit (2 questions), tooth brushing (7 questions), other oral hygiene measures (2 questions), gingival bleeding on tooth brushing (1 question) worry about symptoms of oral diseases (3 questions), satisfaction with the appearance of teeth (1 question), and smoking behaviors (1 question) had dichotomous yes or no response. The questionnaire was developed following relevant literature review by the experienced researchers who are periodontologists. The questionnaire was pretested among the dental students of the same university to eliminate flaws and ensure validity. The questionnaires were administered and completed in the classroom by the undergraduates and returned in anonymous envelope. The participants were informed about the objective of the study after which informed consent was obtained. Participation in the survey was voluntary, no incentive was offered and anonymity was assured all the participants. Data analysis was done using Statistical Packages for the Social Sciences (SPSS) version 16.0. The responses on perceived dental and gingival health were categorized into two as excellent/good and fair/poor. The participants were finally divided into two groups for the purpose of analysis: the first group that have experienced gingival bleeding were those that responded yes to question on gingival bleeding on tooth brushing while the second group that have not experienced gingival bleeding were those that responded no to question on gingival bleeding on tooth brushing. These two groups were then compared and a test of significance was done using with chi-square statistics. P<0.05 was considered significant.

**RESULTS**

Out of the 400 questionnaires that were distributed, 338 were returned filled giving a retrieval rate of 84.5%. About three-quarters (71.3%) of the respondents were less than 22 years old. Males constituted 65.1% while the remaining 34.9% were females. The prevalence of gingival bleeding among respondents in this study was 12.7% [Table 1]. Age and gender did not significantly affect the prevalence of gingival bleeding [Table 2]. Individuals with gingival bleeding were significantly more likely to rate their dental and gingival health as fair/poor [Table 3], use excessive force during tooth brushing, less likely to have received professional instruction on tooth brushing and report worsening

### Table 1: Prevalence of gingival bleeding among the respondents

| Gingival bleeding | Frequency (n) | Percent |
|-------------------|--------------|---------|
| Yes               | 43           | 12.7    |
| No                | 295          | 87.3    |
| Total             | 338          | 100.0   |

### Table 2: Demographic characteristics and gingival bleeding experience among the respondents

| Characteristics | Gingival bleeding | P value |
|-----------------|-------------------|---------|
|                 | Yes (%) | No (%) | Total (%) |         |
| Age (years)     |         |         |         |         |
| <22             | 25 (58.1)| 216 (72.1)| 241 (71.3)| 0.099  |
| 22—24           | 13 (30.2)| 62 (21.0)| 75 (22.2) | 22 (6.5) |
| >25             | 5 (11.6)| 17 (5.8) | 22 (6.5)  | 0.997  |
| Gender          |         |         |         |         |
| Female          | 28 (65.1)| 192 (65.1)| 220 (65.1)|         |
| Male            | 15 (34.9)| 103 (34.9)| 118 (34.9)|         |
| Total           | 43 (100.0)| 295 (100.0)| 338 (100.0)|         |

### Table 3: Perceived oral health status and gingival bleeding experience among the respondents

| Characteristics | Gingival bleeding | P value |
|-----------------|-------------------|---------|
|                 | Yes (%) | No (%) | Total (%) |         |
| Perceived dental status |         |         |         |         |
| Excellent/good  | 33 (76.7)| 262 (88.8)| 295 (87.3)| 0.026  |
| Fair/poor       | 10 (23.3)| 33 (11.2)| 43 (12.7) |         |
| Perceived gingival status |         |         |         |         |
| Excellent/good  | 31 (72.1)| 254 (86.1)| 285 (84.3)| 0.018  |
| Fair/poor       | 12 (27.9)| 41 (13.9)| 53 (15.7) |         |
| Total           | 43 (100.0)| 295 (100.0)| 338 (100.0)|         |
condition of teeth despite daily tooth brushing [Table 4]. There was no significant relationship between gingival bleeding experience, dental visit, and other oral health behavior [Table 5]. Individuals with gingival bleeding were also more likely to express worry about the color of their gingiva and less likely to be satisfied about the appearance of their teeth [Table 6].

**DISCUSSION**

About three-quarters (71.3%) of the respondents were less than 22 years old. Males constituted 65.1% while the remaining 34.9% were females. In this study, the prevalence of gingival bleeding was 12.7% which is comparable to the findings reported among secondary

| Table 4: Relationship between tooth brushing instruction, belief, behavior, and gingival bleeding experience among the respondents |
|---|---|---|
| Characteristics | Gingival bleeding | P value |
| | Yes (%) | No (%) | Total (%) | 
| Twice daily brushing or more | | | | 
| Yes | 21 (48.8) | 156 (52.9) | 177 (52.4) | 0.620 |
| No | 22 (51.2) | 139 (47.1) | 161 (47.6) | 
| No receipt of professional instruction tooth brushing | | | | 
| Yes | 24 (55.8) | 117 (39.7) | 141 (41.7) | 0.045 |
| No | 19 (44.2) | 178 (60.3) | 197 (58.3) | 
| Perceived worsening condition of teeth despite daily tooth brushing | | | | 
| Yes | 11 (25.6) | 25 (8.5) | 36 (10.7) | 0.001 |
| No | 12 (4.4) | 270 (91.5) | 302 (89.3) | 
| Use strong brushing stroke during tooth brushing | | | | 
| Yes | 22 (51.2) | 76 (25.8) | 98 (29.0) | 0.001 |
| No | 21 (48.8) | 219 (74.2) | 240 (71.0) | 
| Perceived prolonged tooth brushing duration | | | | 
| Yes | 15 (34.9) | 65 (22.0) | 80 (23.7) | 0.064 |
| No | 28 (65.1) | 230 (78.0) | 258 (76.3) | 
| Belief in the possibility of adequate tooth cleaning without toothpaste | | | | 
| Yes | 7 (16.3) | 34 (11.5) | 41 (12.1) | 0.372 |
| No | 36 (63.7) | 261 (88.5) | 297 (87.9) | 
| Belief that tooth brushing alone cannot prevent periodontal disease | | | | 
| Yes | 21 (48.8) | 142 (48.4) | 163 (48.2) | 0.932 |
| No | 22 (51.2) | 153 (51.9) | 175 (51.8) | 
| Total | 43 (100.0) | 295 (100.0) | 338 (100.0) | 

| Table 5: Relationship between dental visit pattern, other oral health behavior, and gingival bleeding experience among the respondents |
|---|---|---|
| Characteristics | Gingival bleeding | P value |
| | Yes (%) | No (%) | Total (%) | 
| Previous dental visit/treatment | | | | 
| Yes | 10 (23.3) | 66 (22.4) | 76 (22.5) | 0.897 |
| No | 33 (76.7) | 229 (77.6) | 262 (77.5) | 
| Preference for curative dental care | | | | 
| Yes | 19 (44.2) | 143 (48.6) | 162 (47.9) | 0.599 |
| No | 24 (55.8) | 152 (51.5) | 176 (52.1) | 
| Regular dental floss user | | | | 
| Yes | 12 (27.9) | 61 (20.7) | 73 (21.6) | 0.282 |
| No | 31 (72.1) | 234 (79.3) | 265 (78.4) | 
| Regular mouthwash user | | | | 
| Yes | 20 (46.5) | 103 (34.9) | 123 (36.4) | 0.140 |
| No | 23 (53.5) | 192 (65.1) | 215 (63.6) | 
| Smoke cigarette | | | | 
| Yes | 3 (7.0) | 7 (2.4) | 10 (3.0) | 0.097 |
| No | 40 (93.0) | 288 (97.6) | 328 (97.0) | 
| Total | 43 (100.0) | 295 (100.0) | 338 (100.0) |
Table 6: Relationship between satisfaction with appearance of teeth, worry toward oral health, and gingival bleeding experience among the respondents

| Characteristics                              | Gingival bleeding |  | P value |
|----------------------------------------------|-------------------|---|---------|
|                                              | Yes (%)           | No (%)  | Total (%) |
| Satisfaction with the appearance of teeth    | 20 (46.5)         | 187 (63.4) | 207 (61.2)  | 0.034   |
| Worried about mouth odor                     | 23 (53.5)         | 108 (36.6) | 131 (38.8)  |
| Worried about color of the gingiva           | 16 (37.2)         | 68 (23.1)   | 84 (24.9)   | 0.093   |
| Worried about the color of teeth             | 21 (60.5)         | 138 (46.8)  | 164 (48.5)  |
| Total                                        | 43 (100.0)        | 295 (100.0) | 338 (100.0) |

In this study, individuals with gingival bleeding were significantly more likely to rate their dental and gingival health as fair/poor, use excessive force during tooth brushing, less likely to have received professional instruction on tooth brushing and report worsening condition of teeth despite daily tooth brushing. Gingival bleeding outside pregnancy is clearly related to perceived oral health. The gingival bleeding which occurs in conjunction with other features of periodontal disease may have influenced the sufferers into rating their dental and gingival health as fair/poor. The higher nonreceipt of professional instruction on tooth brushing among individuals with gingival bleeding may explain the inadequacy tooth brushing technique such as use of excessive force during tooth brushing and also the perceived worsening condition of teeth despite daily tooth brushing. Individuals with gingival bleeding were also more likely to express worry about the color of their gingiva and less likely to be satisfied about the appearance of their teeth. This may be hinged on the fact that gingival bleeding exerts unfavorable effect on esthetics and self-esteem, self-control, oral health-related quality of life and occurs with other indicator of poor oral health like poor oral hygiene, altered gingival appearance, halitosis, toothache, gingival recession, and tooth mobility.

CONCLUSION

Data from this survey revealed an established relationship between self-reported gingival bleeding, perceived dental health, perceived gingival health, tooth brushing force, receipt of professional instruction on tooth brushing, perception of the condition of teeth in relation to daily tooth brushing, satisfaction with the appearance of the teeth, and worry about the color of gingiva. Appropriate measures to prevent and control this condition will definitely include professional dissemination of instruction on tooth brushing.

REFERENCES

1. Darby I. Drugs and gingival bleeding. Aust Prescr 2006;29:154-5.
2. Eley BM, Manson JD. Periodontics. 6th ed. Edinburgh (Scotland): Wright Publishing; 2010. p. 144-8.
3. Akinbami BO, Uchendu SN. Acute leukemia presenting with gingival bleeding. A case report. Nig Med Pract 2007;51:51-3.
4. Toygar HU, Guzeldemir E. Excessive gingival bleeding in two patients with Glanzmann thrombasthenia. J Periodontol 2007;78:1154-8.
5. Levin L, Rosenberg M. Oral hygiene, caries status and bad breath among young Israeli recruits. Refuat Haleshinayim 2005;22:27-31, 85.
6. Mumghamba EG, Manji KP, Michael J. Oral hygiene practices, periodontal conditions, dentition status and self-reported bad mouth breath among young mothers, Tanzania. Int J Dent Hyg 2006;4:166-73.
7. Savage KO, Arowojolu MO. Perception of gingival bleeding by Nigerians. Afr J Med Med Sci 1997;26:91-3.
8. Dong M, Loignon C, Levine A, Bedos C. Perceptions of oral illness among Chinese immigrants in Montreal: A qualitative study. J Dent Educ 2007;71:1340-7.
9. Keirse MJ, Plutzer K. Women’s attitudes to and perceptions of oral health and dental care during pregnancy. J Perinat Med 2010;38:3-8.
10. Udoye CI. Oral health attitudes and behaviour among patients in a tertiary hospital. Odontostomatol Tropol 2006;29:19-22.
gingivitis and bleeding gums among adolescents in Helsinki. Community Dent Oral Epidemiol 1994;22 (5 Pt 1):277-82.
13. Kallio P. Self-assessed bleeding in monitoring gingival health among adolescents. Community Dent Oral Epidemiol 1996;24:128-32.
14. Kallio P, Murtomaa H. Determinants of self-assessed gingival health among adolescents. Acta Odontol Scand 1997;55:106-10.
15. Emmanuel A, Chang’endo E. Oral health related behaviour, knowledge, attitudes and beliefs among secondary school students in Iringa municipality. DMSJ 2010;17:24-30.
16. Almas K, Al-Hawish A, Al-Khamis W. Oral hygiene practices, smoking habit, and self-perceived oral malodor among dental students. J Contemp Dent Pract 2003;4:77-90.
17. Al-Shammari KF, Al-Ansari JM, Al-Khabbaz AK, Dashti A, Honkala EJ. Self-reported oral hygiene habits and oral health problems of Kuwaiti adults. Med Princ Pract 2007;16:15-21.
18. Albandar JM, Kingman A. Gingival recession, gingival bleeding, and dental calculus in adults 30 years of age and older in the United States, 1988-1994. J Periodontol 1999;70:30-43.
19. Dumitrescu AL, Dogaru BC, Dogaru CD. Self-control and self-confidence: Their relationship to self-rated oral health status and behaviours. Oral Health Prev Dent 2009;7:155-62.
20. Castro Rde A, Portela MC, Leão AT, de Vasconcellos MT. Oral health-related quality of life of 11- and 12-year-old public school children in Rio de Janeiro. Community Dent Oral Epidemiol 2011;39:336-44.

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