

ORIGINAL RESEARCH

Prevalence of bleeding gums while tooth brushing among betel nut chewers vs non betel nut chewers in school going children

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Abstract

Betel nut (BN) also referred to as Chalia/Supari has been used for thousands of years. BN chewing is an important and popular cultural habit in India, Bangladesh and Pakistan (the subcontinent). It is being used regularly on individual and family basis. The use of BN is prevailing in the rural and urban areas of Pakistan. In several studies, an association between BN chewing and oral health problems like bleeding gums, sore gums have been identified. These lesions are reported in children and adolescents. This is of great concern not only because of the high cost involved in their management but the morbidity and mortality associated with it. Low cost, easy availability, advertising, role modelling, social

acceptance and perception of BN as harmless, contribute to its use. The aim of this cross-sectional study in Central District of Karachi (CDK) was to assess the prevalence of oral soft tissue lesions and to investigate the associations which may exist between oral conditions and BN chewing among the young school going children. Three hundred and sixty students from 17 different schools participated in the study. The mean age was 13.86 ± 1.2 years with the age range of 12 to 16 years. Out of these 360 students, 175 were females and 185 were males. The results showed a high prevalence of bleeding gums while tooth brushing among BN chewers (BNC) compared to non-chewers (NBNC) (19% and 3% respectively). The high prevalence of BN chewing (59% of the low socio-economic young population studied) should be addressed at local and government level through support for effective preventive programs and health promotion campaigns. Promotion of oral health and eradication of BN chewing are important goals for the prevention of oral cancer among this population.

Introduction

The chewing of betel nut (BN) is an old practice in South-East Asia, especially in the Indian subcontinent¹. This tradition is inherited by generation after generation and has become a popular cultural activity among people of Pakistan, India, Sri Lanka, and Bangladesh². BN is a fruit of areca tree that widely grows in tropical Pacific, Asia and east Africa³. It is a small feathery plant that grows to the height of 1.5 m. The most common method of using BN is to chop it into very small pieces with the help of an especial instrument known in local language - Urdu as "sarota". Slurry of slaked lime and catechu boiled in water is applied on a betel leaf and the chopped pieces of BN are rolled in it to be kept in mouth^{4,5}.

BN contains the alkaloid arecoline in addition to nitrosamines, which is carcinogenic. Various studies have been conducted to determine the relation of BN and other alternative chewing material to oral and other associated cancers^{6,7}. It has been proved that BN, Gutka and Paan cause oral cancers^{8,9} and alone in India, out of 700,000 cancers diagnosed each year

300,000 cases are related to tobacco smoking and BN chewing^{10,11}.

Although, the use of BN and Gutka is associated with certain oral conditions; the prevalence and effect on oral health of school going children of 12-16 years of age is not clearly known in local context. This study was conducted to identify the prevalence of oral lesions and to investigate association which may exist between the oral conditions and BN/Gutka chewing among the school going children.

Objectives of the study

To identify oral lesions present in school going children and to compare the prevalence of oral lesions among those who chew betel nut versus non-chewers.

Methodology

A cross sectional study was conducted in City District, Karachi. A research questionnaire was prepared, and sent along with the parental consent and student assent forms to the Clinical Research Ethics Committee of the Cork Teaching Hospital, University College Cork for ethical approval, which approved it. Ethical approval was also granted from Baqai Dental College, Karachi for this study. The questionnaire was scrutinized by the subject specialists and was coded for statistical purposes. The research questionnaire consisted of chewing habits, clinical interview and findings of the clinical examination.

The sample comprised of 360 students from 17 different schools in CD, Karachi. The age range of sample population was 12 - 16 years. The authors was trained and calibrated for the examination of oral health and identification of oral lesions at Cork University School and Dental Hospital. In Karachi, the author hired qualified dental assistants and trained and calibrated them. The subjects had their oral examination done on the specified date by the author and the trained dental staff.

Individuals were examined in the natural day light on a chair in a separate room to maintain privacy. A hand torch was also used in some cases, where natural daylight was insufficient. A sterile CPITN probe was used to observe bleeding on gentle probing. When required the teeth were dried using cotton wool rolls. Universal precautions were followed. Personal protective clothing and equipment was worn by all the examiners and recorders in attendance. Latex free examination gloves were used for the examination of each child and were changed before examining the next child. A facemask was worn and changed at frequent intervals. A disposable paper sheet was used under each set of instruments and disposed after each

examination. The CPITN probes and mirrors were placed in a container used solely for the transport of "contaminated" instruments. All re-usable instruments were washed and autoclaved at the end of each session. All contaminated waste, which included gloves, facemasks, cotton wool rolls, tissues and wipes, were disposed into 'hazardous waste' yellow bags in accordance with infection control best practice. Two plastic boxes for instruments were used, of which; one box was for transporting sterile instruments only while the other box was for contaminated instruments. All children were given protective eye covers to wear. These were cleaned with disinfectant wipes between examinations. The torches were wiped with a disinfectant between examinations.

Each child was asked to sit on the chair. Face masks and tinted protective eyewear were used for all the children. First, a visual examination was done to check for dental caries. Teeth were examined wet, and a CPITN probe was used to remove food debris as well as to confirm dental cavitations. Soft tissues and oral cavity were then examined for any abnormalities.

Statistical Analyses

SPSS Version 18® was used for statistical analysis. The following information was obtained and analysed:

- The number of children examined by gender and age.
- The mean age in years of children that participated in the study.
- Habit of BN chewing and its association with gender.
- Frequency of tooth brushing habit.
- Distribution of subjects by gender and tooth brushing habit
- Association of gender with the frequency of bleeding gums while brushing teeth

Results

The distribution of males and females by the status of betel nut chewing:

As illustrated in the table below, 61.61% of males and 38.39% of females chewed betel nut (Table 1.1).

Table 1.1: BN chewing and gender distribution

Betel nut chewing	Males% (n)	Females% (n)
Yes	61.61 (130)	38.39 (81)
No	36.91 (55)	63.08 (94)

The value of chi square is 21.32, df = 1 and p = 0.000. There was a significant difference in the habit of betel nut chewing among males and females. Almost

twice the numbers of males (61.61%) chewed betel nut as compared to females (38.39%).

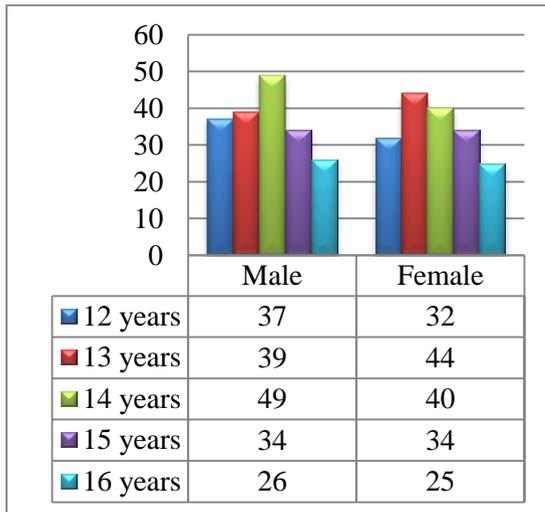


Figure 1.1: Gender and age of the subject

Tooth brushing habit: Frequency of tooth brushing was ascertained from question 1 of the oral hygiene and chewing habits questionnaire (Appendix VI).

It was noted that 15.85% subjects never brushed their teeth whereas 45.83% brushed once a day, 33.61% twice a day and 4.71% more than that (Graph 1.2).

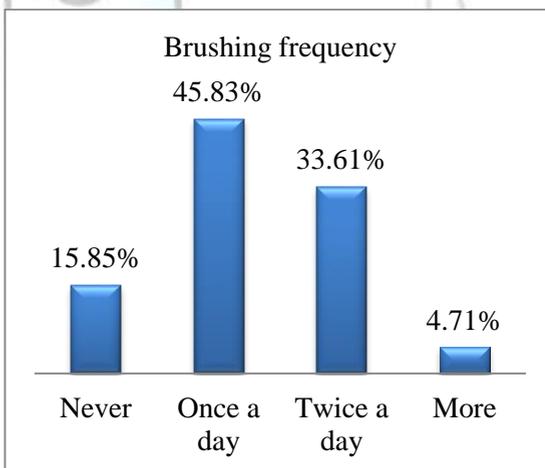


Figure 1.2: Frequency of tooth brushing

- **Tooth brushing habit among males and females:** The results showed that 16.75% males never brushed their teeth, 38.37% brushed once a day, 37.83% twice a day and 7.05% more than twice a day. Among females, 14.85% never brushed their teeth, 53.71% brushed once a day, 29.16% twice a day and 2.28% more than that (Graph 1.3).

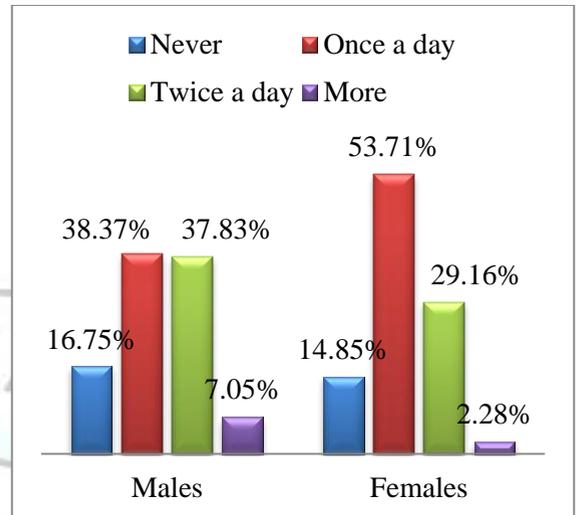


Figure 1.3: The distribution of subjects by gender and tooth brushing habit

- **The association of tooth brushing with betel nut chewing:** When the tooth brushing habit of both the groups was compared, it was noted that among BNC, 11.86% never brushed their teeth, 40.28% brushed once a day, 42.65% twice a day and 5.21% brushed more than twice a day. In comparison, among NonBNC, 21.47% never brushed their teeth, 53.69% brushed once a day, 20.80% twice a day and 4.04% brushed more than that (Graph 1.4).

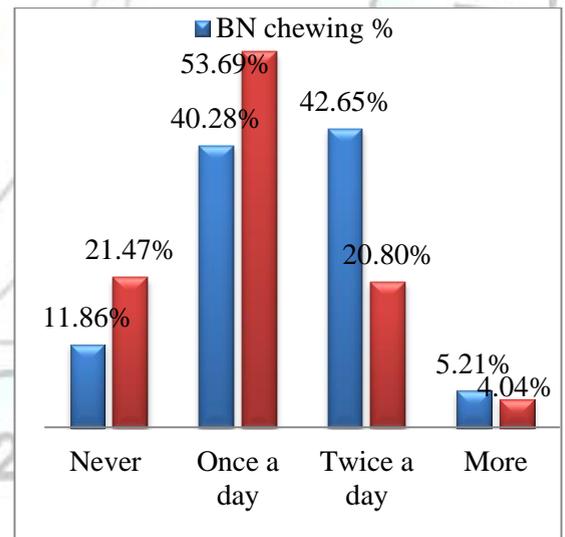


Figure 1.4: Association of tooth brushing with BNC

Chi square value is 21.29, df= 1 and p= 0.001. There was a significant difference in the frequency of tooth brushing among BNC and NonBNC. Eighty eight point one four percent of BNC were brushing teeth as compared to 78.53% of NonBNC.

- **The association of gender with the frequency of bleeding gums while brushing teeth:** It was noted that 67.02% of males and 81.14% of females never had bleeding gums while brushing their teeth. Eighteen point three nine percent of males and 14.86% of females occasionally had bleeding, while 14.59% of males and 4% of females frequently had bleeding from their gums while brushing teeth (Graph 1.5)

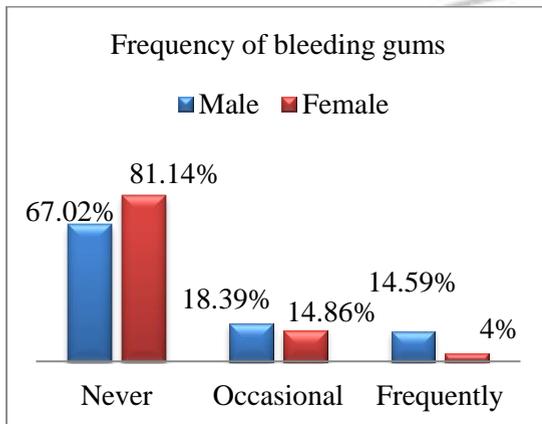


Figure 1.5: Association of gender with the frequency of bleeding gums while brushing teeth

The value of chi square is 13.78, df= 2 and p=0.001. There was a significant difference in complaints of bleeding gums while brushing teeth between the genders with females having gums that bleed less often.

- **The association of betel nut chewing with the frequency of bleeding gums while brushing teeth:** Among BNC, 18.95% occasionally had bleeding gums and 10.44% frequently had bleeding from gums while brushing their teeth. However, among NonBNC; 13.43% occasionally had and 8.05% frequently had bleeding from gums while brushing their teeth (Table 1.2).

Table 1.2: The association of bleeding gums while brushing teeth and betel nut chewing

Frequency of bleeding gums while brushing teeth	BNC % (n)	Non BNC % (n)
Never	70.61 (149)	78.52 (117)
Occasionally	18.95 (40)	13.43 (20)
Frequently	10.44 (22)	8.05 (12)
Total	100 (211)	100 (149)

The value of chi square is 2.865, df= 2 and p= 0.239. There was no significant difference in gum bleeding while brushing teeth between BNC and NonBNC.

- **The association of bleeding gums without brushing teeth with betel nut chewing:** It was noted that 5.69% BNChad bleeding gums without brushing teeth. On the other hand, 0.68% NonBNC had bleeding gums without brushing theirteeth (Table 1.3).

Table 1.3 The association of bleeding gums without brushing teeth and betel nut chewing

Bleeding gums without brushing teeth	BNC % (n)	NonBNC % (n)
Yes	5.69 (12)	0.68 (1)
No	94.31 (199)	99.32 (148)
Total	100 (211)	100 (149)

The value of chi square is 6.313, df= 1 and p= 0.012. There was a significant difference among both the groups with more BNC having bleeding gums without brushing teeth as compared to NonBNC.

Discussion

In our study, we found out that twice a number of males were indulged in Betel nut chewing as compared to females. Females had the highest percentage of brushing teeth but males predominated in brushing teeth twice a day. It was also noticed that tooth brushing was more common among BNC as compared to Non BNC. In contrast to males, bleeding gums was less common in females.

It is seen that mostly periodontal diseases progress un-noticed. People commonly recognize it at an advance stage. It is therefore important to make dental health education mandatory for control and maintenance of periodontal health.

Early recognition of periodontal conditions is not so common because people do not understand the connection between gum bleeding and gum disease. According to Brady, 73% of patients with periodontal disease did not know that they had it¹². Almas et al reported 42% of Saudis with bleeding gums¹³. Khawamura and Eva Motto found that 3 quarters of Japanese employees had bleeding gums¹⁴.

Gingivitis with bleeding gums is the first symptom of periodontal disease. This symptom of disease is self-detected and is the most reliable indicator of the condition¹⁵. In order to prevent progression of periodontal disease, the public needs dental health education to connect gingival bleeding with gum disease¹⁶. The aspect of dental health education therefore has a key role in the awareness of periodontal disease among different groups of society.

Self-Reporting

Research conducted in Dundee dental hospital and school revealed astonishing results about the knowledge and understanding of periodontal disease among the people who took part in the study. People were unable to recognize that they have periodontal disease while having gingival bleeding¹⁷. Although people were aware of bleeding gums at times, there were other times when it went unnoticed A.D. Gilbert & N.M. Muttall. Radiographs were not used in order to validate the self-reporting instrument and also to avoid unnecessary radiation. The CPITN method was normally used to determine periodontal treatment needs and was considered more appropriate to make patient realize that they have gum disease.

Conclusion

The results of this study indicate dental and oral care education must be included in a national program that promotes preventive oral care in schools as well in other oral health educational programs aimed at the general public. This recommendation is based on the finding that children were aware of the importance of dental care but need proper education and guidance.

References

1. Rooney DF. Betel nut chewing in south East Asia.http://rooneyarchive.net/lectures/lec_betel_chewing_in_south-east_asia.htm
2. Gupta PC, Ray CS. Epidemiology of betel quid usage. *Ann Acad Med Singapore*, 2004;33(suppl):31s-36s
3. en.wikipedia.org/wiki/Areca
4. Patel K. Helping members of the South Asian community quit smokeless tobacco. <http://www.nice.org.uk/newsroom/features/HelpingMembersOfTheSouthAsianCommunityQuitSmokelessTobacco.jsp>
5. Nair U, Bartsch H, Nair J. Alert for an epidemic of oral cancer due to use of the betel quid substitutes gutkha and pan masala: a review of agents and causative mechanisms. *Mutagenesis*. 2004;19(4):251-62.
6. Yang YH, Lien YC, Ho PS, Chen CH, Chang JS, Cheng TC, Shieh TY. The effects of chewing areca/betel quid with and without cigarette smoking on oral submucous fibrosis and oral mucosal lesions. *Oral Dis*. 2005;11 (2): 88-94.
7. Trivedy CR, Craig G, Warnakulasuriya S. The oral health consequences of chewing areca nut. *Addict Biol*. 2002;7(1):115-25.
8. Thomas and MacLennan (1992). "Slaked lime and betel nut cancer in Papua New Guinea". *The Lancet Oncology* 340 (8819): 577-578.
9. Shwu-Fei LC, Chiu-Lan C, Liang-Yi H, Pi-Chen H, Jung-H C, Chang-Ming S, Chin-Wen C, and Tsung-Yun L. Role of oxidative DNA damage in hydroxychavicol-induced genotoxicity. *Mutagenesis* vol.11 no.5 pp.519-523, 1996
10. SangeetaDarvekar Charitable Trust
oralcancerawareness@gmail.com
11. Summers RM, Williams SA, Curzon ME. The use of tobacco and betel quid ('pan') among Bangladeshi women in West Yorkshire. *Community Dent Health*. 1994;11(1):12-6.
12. Brady WF. Periodontal disease awareness. *The Journal of the American Dental Association*. 1984;109(5):706-10.
13. Taani DQ. Periodontal awareness and knowledge, and pattern of dental attendance among adults in Jordan. *International dental journal*. 2002;52(2):94-8.
14. Okada M, Kawamura M, Kaihara Y, Matsuzaki Y, Kuwahara S, Ishidori H, et al. Influence of parents' oral health behaviour on oral health status of their school children: an exploratory study employing a causal modelling technique. *International Journal of Paediatric Dentistry*. 2002;12(2):101-8.
15. Walsh MM. Effects of school-based dental health education on knowledge, attitudes and behavior of adolescents in San Francisco. *Community dentistry and oral epidemiology*. 1985;13(3):143-7.
16. Murtomaa H, Meurman J, Rytömaa I, Turtola L. Periodontal status in university students. *Journal of clinical periodontology*. 1987;14(8):462-5
17. Gilbert A, Nuttall N. periodontology: Self-reporting of periodontal health status. *British dental journal*. 1999;186(5):241-4.