Original Article

Habits of Tooth Brushing and Tobacco/Betel Nut use among Patients Attending Dental Outpatient Department in a Teaching Hospital

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ABSTRACT

OBJECTIVE: To investigate the use of tobacco/betel nut and frequency of tooth brushing in males and females reporting to OPD.

METHODOLOGY: A cross-sectional survey was carried out on 600 patients attending the Dental OPD of Sindh Institute of Oral Health Sciences (SIOHS) in Karachi from January to March 2019. After obtaining informed consent from all participating subjects, data regarding tobacco/betel nut use and frequency of tooth brushing were recorded by the investigator. Data analysis was done using SPSS version 20.0 (SPSS Inc., USA).

RESULTS: Regarding use of tobacco, more females were using smokeless tobacco (40%), whereas more males smoked cigarettes (27%). In terms of tooth brushing, greater proportion of non-tobacco users (54.7%) had better brushing habits compared to smokeless tobacco and cigarette smokers (26.7% and 17.5 % respectively). Regarding frequency of tooth brushing, more non-tobacco users (53%) brush or miswak at least once a day compared to tobacco users. Additionally, there is a significant difference in frequency of brushing habit between males and females (22.1% and 43.2 % twice a day respectively) suggesting that females have better brushing habits. A statistically significant association was seen between tobacco users and brushing habit using Chi-Square test (p < .001).

CONCLUSION: Patients using tobacco reported poor oral hygiene practices than non-users. Patients using tobacco (cigarette smokers and smokeless tobacco) should be identified separately and oral hygiene measures reinforced as part of routine dental practice.

KEYWORDS: Tobacco, Tooth brushing, Oral hygiene, Smoking

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INTRODUCTION

Current surveys in people of all ages have established tobacco usage as a major contributor to compromised oral health. There is a significant prevalence of higher mean probe depth and bone height is lowered in smokers than in non-smokers[1]. According to the World Health Survey smoking tobacco among adults was 19.9 per cent (33.5 per cent for males and 6.2 for females)[2]. Both the usage of smokeless tobacco and its inhaled forms are witnessing a significant rise[3]. It requires to concentrate tobacco control policies in Pakistan not just on cigarette smoking but also on the use of smokeless tobacco. Education and deprivation rates remain a significant indicator of both men and women's tobacco consumption i.e. 42.5 % among males, and 19.7 % among females in Karachi[4].

There is strong corroboration that chewed or dissolvable tobacco becomes the fountainhead of oral cancer, particularly where the tobacco is regularly placed[5].

Smoking has been linked with a diminish response to non-surgical and surgical anti-infectious therapies, though the negative outcome of smoking may persist for many years, such effects may be reversible following smoking cessation [6]. Knowing the harmful effects of tobacco use, health caregivers are encouraged to estimate and disapprove its use[6].

The study indicates that there is an agreement in the literature that regular teeth cleaning once a day is appropriate to preserve oral hygiene and avoid caries and periodontal diseases. Nevertheless, most patients are unable to obtain effective plaque clearance by taking oral hygiene steps at home. For this cause, teeth brushing twice every day is recommended by most dentists[7]. Commitment to this oral care routine is highly essential for tobacco consumers due to their elevated likelihood of impaired oral health. Several reports have been published on oral health treatment for different populations[7], although several research have measured harmony with oral hygiene regimens among tobacco smokers[8].

Bergstrom et al identified no discrepancies in accordance with the oral hygiene system between smoking and non-smoking dental patients[9], whereas Andrews and the group identified that tobacco in dental patients registered especially bad oral hygiene

and health. In comparison, the level of brushing and flossing among smokeless tobacco consumers was especially poor. They noticed that smokeless tobacco consumers considered that they had more severe oral health issues than smokers or non-users, but did not account for these issues by the their commitment to oral hygiene regimens [10].

The primary aim of this study is to report tobacco/ betel and betel nut use and oral hygiene habits and to test the null hypothesis that the oral hygiene habits of tobacco / betel nut users are not better than non-users.

METHODOLOGY

A Cross sectional study was carried out on 600 patients attending the Dental OPD SIOHS in Karachi from January to March 2019. Participants were recruited through simple random sampling. Sample size has been calculated using WHO calculator having prevalence 73%, margin of errors 5% with confidence interval of 95%. Therefore, the sample size will be minimum of 303 participants. An ethical approval was sought from institutional review board, Jinnah Sindh Medical University (letter no. JSMU/IRB/2018/-133). Patients of both genders age above years and who gave the consensus were included. Patients who are coming to OPD for any other emergency and that requires prompt treatment or those who are decision impaired due to cognitive deficits were excluded.

Initially an informed consent was obtained from all participating subjects. Later, data regarding tobacco/ betel nut use and frequency of tooth brushing were recorded using patients' history forms. The data collected from the history form included two aspects: Part one entailed sociodemographic details including reason for attending the dental OPD**.** Part two enquired about the habits which includes tobacco/ betel nut use and oral hygiene practice pertaining to use of and frequency of use of tooth brush or miswak.

The recorders who collected data were trained initially and the questionnaire used in this study without any amendments were taken from history form of Jinnah Sindh Medical University.

Data analysis was done using SPSS version 20.0 (SPSS Inc., USA). From the sociodemographic section, means and standard deviations of the quantitative variables and proportions for the categorical variables were determined. The response variables were measured on nominal or ordinal scale. Chi Square test (or Fisher's exact test) was applied to test any difference in choices between the two genders and association between tobacco user and their oral hygiene maintenance with non-tobacco user. P-value of less than 0.05 was considered as statistically significant.

RESULTS

Description of the Study Groups

This cross-sectional study recruited six hundred participants with three hundred participants in each group. There were two groups of study participants; tobacco/ betel nut user participants and non-tobacco user participants. In each group 300 participants were recruited after written informed consent.

Comparison of Demographic Characteristics across different study groups

The demographic characteri03

stics (i.e. gender and age categories) and educational level were compared among participants enrolled in two study groups. Among 600 participants, 50.3% were male. There was significant difference in gender when compared across the groups. Greater proportion of males were tobacco users (55.6%), followed by non -tobacco users. Moreover, among the participants enrolled majority (55.6%) belonged to younger age group (18-35 years) followed by age category 36-55 years (33.5%). Similarly, while comparing the age categories significant difference (p-value < 0.001) was found among the two groups. Among the participants enrolled in this research, 22.1% had no education followed by religious education (21.8%). Importantly, more than quarter of participants (26.4%) had university education. Significant difference was present between the educational levels of the two study groups. Greater proportion of participants having university education were tobacco users (54.5%), compared to non-tobacco users (45.5%). Table I gives detail of comparison of demographic characteristics among the two study groups.

TABLE I: COMPARISON OF DEMOGRAPHIC CHARACTERISTICS ACROSS DIFFERENT STUDY GROUPS

	Non-Tobacco User (n = 300)	Tobacco / betel nut user (n = 300)	Total (n = 600)
Gender			
Male	139 (46)	163 (55.6)	
Female	161 (54)	137 (44.4)	
Education level			
No Education	69 (48)	74 (51)	143 (22.1)
Religious Education	70 (53)	61 (46.5)	131 (21.8)
Primary	27 (54)	23 (53)	50 (8.3)
Secondary	34 (53)	30 (46.8)	64 (10.6)
Intermediate/College	25 (53)	22 (52)	47 (9)
University	75 (45.4)	90 (54.5)	165 (26.4)
Age Categories (years)			
18-35	167 (50)	163 (49)	330 (55.6)
36-55	101 (50)	100 49.2)	201 (33.5)
>55	32 (46.4)	37 (52.4)	69 (11.5)

Comparison of Oral Hygiene habits across different study groups

Comparing the status of tobacco/betel nut use, a greater proportion of females were using smokeless tobacco (40%) compared to males (25%). On the contrary, more males were smoking cigarettes (27%) as compared to females (6%). Only 2% males and 0.4% females were users of both smoke and smokeless tobacco (Table II).

The oral hygiene habits were compared among tobacco/betel nut user and non-tobacco users. Among 600 participants, majority (75.4%) had tooth brushing habits followed by using Miswak (21%). Significant difference was seen in tooth brush habits among tobacco user and non-tobacco user groups. Greater proportion of non-tobacco user participants (54.7%) had tooth brushing habits compared to smokeless tobacco user and cigarette smoking user participants (26.7% and 17.5 % respectively). Interestingly, greater number of smokeless tobacco user participants (53.6%) used miswak than the non-user participants (36%). Moreover, 23 participants (4 %) used no oral hygiene aid (tooth brushing or miswak). Among the participants enrolled, slightly less than sixty percent (59.9%) brushed or used miswak at least once a day, followed by participants

Tooth brushing or using miswak twice a day (34%). Whereas only 2.4% participants brushed or used miswak thrice a day (Table 3).

Significant difference was present when comparing frequency of tooth brushing among tobacco user and non-tobacco user study groups. In this research, greater proportion of non-tobacco user group (53%) brushed or used Miswak at least once a day compared to tobacco user group (smokeless-30% and cigarette user-16%). Furthermore, there was no significant difference between non-tobacco users (44%) and smokeless tobacco users (40%) when brushing or using miswak twice a day. Apart from that, participants who were brushing or using miswak thrice a day were all non-tobacco users (Table III).

Additionally, there was a significant difference in frequency of tooth brushing habit between male and female (22.1% and 43.2 % twice a day respectively) which showed that female have better tooth brushing habits as compared to male. When comparing the female non-tobacco user and male non-tobacco user, there was a significant difference as greater number of female non users (64.1%) brush or miswak twice a day than males non tobacco users (46%) (Table IV).

Chi-square test was conducted between tobacco user and tooth brushing habit. A statistically significant association between tobacco user and tooth brushing habit, $\chi^2(9) = 82.504$, $p < .001$ was recorded. The association was moderately strong (Cohen, 1988), Cramer's V = .287.

There was a statistically significant association between the variables. Therefore, we can reject the null hypothesis and accept the alternative hypothesis.

TABLE II: TOBACCO USE STATUS IN MALES AND FEMALES

Gender	Non-Users (n=300)	Cigarette Smoking	Smokeless Tobacco users	Users of both cigarettes and smokeless tobacco	Total
Male	139 (46)	83 (27)	74 (25)	6 (2)	302 (50.3)
Female	161 (54)	17 (6)	119 (40)	1 (0.4)	298 (49.7)

TABLE III: COMPARISON OF ORAL HEALTHCARE ACROSS DIFFERENT STUDY GROUP (OVERALL)

	Cigarette Smoking (n=100)	Smokeless Tobacco (n=193)	Cigarette smoking and smokeless tobacco (n=7)	Non-tobacco user (n=300)	Total (n = 600)	p-value
Oral health care						
Tooth Brushing	80 (17.5)	121 (26.7)	4 (0.9)	247 (54.7)	452 (75.4)	0.000
Miswak	11 (9)	67 (53.6)	2 (1.6)	45 (36)	125 (21)	
No tooth Brushing or Miswak	9 (39)	5 (21)	1 (4)	8 (37)	23 (4)	
Frequency of tooth Brushing/Miswak						
Never	9 (39)	5 (21)	1 (4)	8 (37)	23 (4)	0.001
Once a day	58 (16)	107 (30)	5 (1.4)	189 (53)	359(59.9)	
Twice a day	31 (15.4)	81 (40)	1 (0.5)	91 (44.6)	204 (34)	
Thrice a day	2 (14.5)	0 (0)	0 (0)	12 (99.9)	14 (2.4)	

TABLE IV: COMPARISON OF ORAL HEALTHCARE ACROSS DIFFERENT STUDY GROUP (MALES)

	Cigarette Smoking (n=83)	Smokeless Tobacco (n=74)	Cigarette smoking and smokeless tobacco (n=6)	Non-tobacco user (n=139)	Total (n = 302)	p-value
Oral Health Care						
Tooth Brushing	69 (28)	60 (24)	3 (1.2)	117 (45)	249 (81)	0.000
Miswak	8 (22)	10 (27)	2 (5.5)	17 (46)	37 (12.3)	
No tooth Brushing and Miswak	6 (37.9)	4 (35)	1 (6.3)	5 (31.5)	16 (5.3)	
Frequency of tooth Brushing/Miswak						
Never	6 (38)	4 (25)	1 (6.2)	5 (30.9)	16 (5.3)	0.006
Once a day	49 (22.5)	63 (29)	4 (1.8)	101 (46)	217(71.8)	
Twice a day	28 (41.7)	7 (10.4)	1 (1.4)	31 (46)	67 (22.1)	
Thrice a day	0 (0)	0(0)	0(0)	2 (100)	2 (0.6)	

DISCUSSION

Overall, non-tobacco consumers brushed a lot more often than consumers. This was consistent with the findings of the Agbor AM 2020[11]. Not only did tobacco users reported following less than the minimum oral hygiene recommendations, the amount of tobacco usage was inversely associated to the frequency of both tooth brushing or miswak use. The tooth brushing frequency among smokeless tobacco users was particularly low. The importance of this finding increases, given the detrimental effects of smokeless tobacco on oral health[12]. While there are some disagreements about the relative role of oral bacteria and tobacco use as promoters of periodontal disease study, it is shown that the use of plaque control hygiene regimens may prevent or slow down the development of periodontal disease, which is clearly linked to tobacco use[13].

The volume of tobacco consumption was contrary with the level of both tooth brushing and miswak application[12,14]. The significance of this observation rises in view of the adverse consequences of tobacco on oral health[15,16].

Several reports have demonstrated co-variation in health-enhancing behaviours. Therefore, those engaged in the unsafe practice of cigarette consumption will be less inclined to participate in health-enhancing practices such as recommended oral care[17]. This research further authenticates the necessity for dental professionals to assess patient's cigarette and smokeless tobacco use[18]. During a period when smoking tobacco is increasing, particularly among young people who are not informed about the health risks associated with its usage, dental professionals can have an effect on reducing initiation and promoting abstinence among young people by offering brief advice and awareness content on health risks[19]. Multiple studies in the past have reported the contribution of dentists related to smoking cessation counselling and advise related to its usage and individual behavioral counselling have proven to be the best method in smoking cessation[20]. Our findings provide additional rationale for this. Many nations have built methods of integrating anti-smoking measures into daily routine dental checkups. Numerous reports, including those reported by Vendrell Rankin K 2010[21], show that training the practitioners is a key to the application of recommendations to help people stop smoking, maintaining a high degree of care and efficacy. Kim et al who recruited 91 men and 18 women in his trial, the experimental condition received eight weekly 40-minute individualized counseling sessions incorporating Korean-specific cultural elements, while the control condition received eight weekly 10-minute individualized counseling sessions that were not culturally adapted. All participants received nicotine patches for 8 weeks[22].

Fanshawe TR 2019[23] demonstrated that encouraging patients to quit tobacco intake is a professional responsibility. Additionally, tobacco users who are interested in quitting can receive tobacco cessation services from dental care providers. Difficulty in leaving this harmful habit is a crucial element. Tobacco consumers involved in quitting are also more likely to be confident seeking guidance to leave. So, here the question arises "Do you want to quit?" Dentists can assess which patients may be insulted or insensitive to termination advice. There are a variety of approaches to help patients stop smoking that can be followed by their dentists that are typically skilled in consumer behaviour management[24].

Some studies say that a particular strategy or a combination of approaches can be utilized at the

same time, based on the degree of addiction[25]. Given current research and the suitability of dental clinics to prevent smoking and motivate patients to stop, awareness and execution of such methods is quite low in everyday dental practice[26].

To make this more successful, the guidelines for avoidance of tobacco usage and oral health regimens in the patient's chart are advocated, so the dentist can reinforce these endorsements on succeeding appointments.

One of this study's drawbacks was the limited sample size of the dental patients. Self-reporting was encountered as a bias in this study. However, if the history form had included questions about other methods (apart from tooth brushing or miswak) of plaque control and the number of access to dental health services it would have been meliorated further.

CONCLUSION

The results of the study suggest that dental patients using tobacco reported specifically poor oral hygiene practices as compared to non-users. This necessitates to identify every tobacco user and also to separate cigarette smokers from smokeless tobacco users. These individuals may then be aimed for oral hygiene compliance and tobacco cessation services.

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AUTHOR CONTRIBUTIONS

Shaikh MS: Design, concept
Lone MA: Search strategies
Khan MS: Drafting the research
Iqbal K: Edited & revised manuscript
Siddiqui S: Prepare results
Abrar SK: Approved final version, wrote discussion
Allana R: Analysis & interpretation of results
Kumar LK: Edited & revised manuscript

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