

A survey on oral hygiene methods practiced by patients attending Dentistry Department at a Tertiary Care Hospital from Central Gujarat

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Abstract

Objective: Oral hygiene is important not only for maintaining health of teeth and gingivae in an individual but also for good and uneventful regeneration and healing of tissues, when one has undergone one or other dental treatments. This makes it important to have an understanding of oral hygiene practices employed by the population. **Materials and Methodology:** This descriptive cross-sectional hospital-based survey was carried out to know oral hygiene methods practiced by patients who visited Department of Dentistry at a Tertiary Care Hospital attached to medical college from Central Gujarat. While examining and recording their history, their mode of oral hygiene practice was also noted. Recorded data were entered in Microsoft Excel and analyzed in SPSS Statistics Version 17.0. The study reports proportions of the variables under study in percentages. **Results:** The patients ranged from 4 to 80 years in age with equal numbers from both genders. The number of participants using modern and scientific material and instrument for oral hygiene was good. However, majority of them performed it only once a day, and none after every meal or at bed time. **Conclusion:** There is a need to improve the frequency of oral hygiene procedure among the studied population as well as use of dental floss needs to be increased.

Key words: Dentistry Department, India, oral hygiene methods

INTRODUCTION

“Oral Health for a Healthy Life” was the theme declared by World Health Organization on World Health Day 1994.^[1] Good oral health which includes disease-free teeth and supporting tissues are important for over all physical health. Healthy set of teeth and gums also form an important part of what is now known as facial esthetics.

Maintaining good oral hygiene is a must for having healthy teeth and gingivae. Various materials and

methods are suggested and used for the purpose of removing food particles and other deposits from surfaces of teeth to keep them healthy.

With changing in lifestyles, there is an ever-rising proportion of population consuming higher proportion of free sugars. In India, the amount of free sugar intake is already higher compared to the world average and consumption of sugar-sweetened beverages is increasing at an alarming rate.^[2] An association between the amount

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and frequency of free sugars intake and dental caries has already been proved.^[3] In light of this, it is imperative to know the current oral hygiene practices of the population.

There are studies on oral hygiene practice from India^[4-8] and abroad.^[9-13] So far, there is no such study from Western part of India. Hence, this study was carried out to document oral hygiene methods practiced by the patients presenting to dental outpatient department (OPD) run by the Department of Dentistry at a Tertiary Care Hospital attached to a Medical College from Central Gujarat, a state in Western India. This study focuses specifically on methods, materials, and frequency of oral hygiene procedures practiced by the patients.

MATERIALS AND METHODOLOGY

Study design

The design for the current study was a descriptive cross-sectional hospital-based survey.

Ethical issues

The study protocol was cleared through the Institutional Ethics Committee of the institute. Informed consent was taken from the participants. The participants were informed that their participation in the study will be anonymous, voluntary, and noncompulsory. They were assured about anonymity and confidentiality of the information provided. This study being a descriptive study, there was no intervention involved. Hence, there was less than minimal risk to the participants.

Study participants

Inclusion criteria

All new patients attending dentistry OPD and giving consent to participate in the study were included in the study.

Exclusion criteria

all the old patients were excluded from the study to avoid duplication.

Study period

The study participants were recruited over a period of 1 month during mid-April to mid-May 2015.

Sample size

Our primary outcome variables were material and instrument for oral hygiene procedure. Based on a pilot

study done, it was estimated that the major category in the material was the nonmedicated toothpaste with the prevalence of around 80%. Same way for the instrument used, 80–90% patients showed use of toothbrush. Thus, taking these values as base, we kept “*p*” at 0.8 and “*q*” at 0.2. At 95% confidence level, the value of *z* is 1.96 and we kept allowable error at 5% on either side of “*p*”. Thus, substituting these values in the formula for sample size calculation, $n = z^2 pq/l^2$, we calculated the sample size to be 246 using nMaster software developed by Biostatistics Resource and Training Center, Christian Medical College, Vellore, India.^[14] This figure roughly corresponded to the figure of all new patients attending dental OPD in 1 month at this institute. Thus, we decided to collect data for 1 month from this dental OPD. Hence, entire census of eligible patients coming to this dental OPD during the 1 month time of mid-April to mid-May was selected for this study. A total of 258 new patients attended the OPD during the study period of 1 month. Thus, the actual final sample size came out at 258 patients.

Data collection method

We used a semi-structured questionnaire for data collection. The review of literature gave us valuable insight about the variables to be kept for this study. Based on these, the first author prepared the first draft of the questionnaire. The questionnaire was then validated by three dental surgeons for content. The draft version was pilot tested on 5 patients in the OPD before starting the study. The final questionnaire was in two parts: Part 1: Demographic details of the study participants. This was obtained primarily from their hospital case records and verified by interview of the patients. Part 2: Information about practice of oral hygiene methods. This was filled at the end of consultation and treatment process for each patient. To ensure quality, these participant questionnaires were filled by the treating dental surgeons themselves.

Study variables

Variables recorded in the study were (i) various oral hygiene materials, (ii) various oral hygiene instruments, and (iii) oral hygiene frequency.

Data management and statistical analysis

The data thus collected were entered in Microsoft Office Excel and analyzed in SPSS Statistics version 17.0 software developed by IBM Corp. in Armonk, New York. Chi-square test was applied for statistical significance testing.

RESULTS

At the end of data collection, the study obtained information from a total of 258 participants from the dental OPD.

Table 1 shows distribution of male and female patients in the dental OPD. It shows equal number of male and female patients who visited the dental OPD. A majority of patients were in the active young age group. Highest proportion was from the age group 31 to 40 years.

Table 2 shows distribution of various oral hygiene materials used by study population. Table 2 shows that the cleaning material in the form of toothpastes was more commonly used compared to powder form. Within the toothpaste category, largest proportion of the participants used nonmedicated toothpaste (81.8%). None of the participants were using black toothpowder. There was no significant difference for use of any material among males and females.

Table 3 shows distribution of instruments used for oral hygiene. The most common instrument was a toothbrush. Almost one-tenth was also using finger for mouth cleaning. None of the participants were using dental floss. Only one participant gave history of using a proxa brush. There was very small gender difference for use of toothbrush and finger for oral hygiene. The difference was not statistically significant.

Table 4 shows distribution of frequency of performing oral hygiene procedure, by the study population. It is to be noted that most of them practiced it only once a day (82.1%). Larger proportion of female participants was found to be using an oral hygiene procedure twice a day compared to males. This difference was statistically significant. None of the participants reported using any oral hygiene procedure after every meal.

DISCUSSION

As a part of behavioral modernity, since even before Stone Age era, man started using a variety of oral hygiene measures. Anthropological excavations done in different parts of the Earth showed evidence that “chew sticks,” the predecessor of toothbrushes, were in use since as early as 3500 BC in Babylonia and Egypt, and 1600 BC in China.^[15] People from different cultures used different materials and tools for oral hygiene. Indian medicine, Ayurveda, advocated Daatun to be chewed on one end, so that it resembles a brush, and then to be used to brush teeth.

Table 1: Demographic profile of study participants (n=258)

Study variable	n (%)
Gender	
Male	129 (50)
Female	129 (50)
Age (years)	
1-10	12 (4.6)
11-20	22 (8.5)
21-30	51 (19.7)
31-40	61 (23.6)
41-50	43 (16.6)
51-60	39 (15.1)
61-70	17 (6.5)
71-80	12 (4.6)

Table 2: Various materials used by study population (n=258)*

Material for oral hygiene	Males (n=129) n (%)	Females (n=129) n (%)	Total (n=258) n (%)	Statistical test
Datun	6 (4.7)	2 (1.6)	8 (3.1)	$\chi^2=1.24$ $P=0.74$, NS
Ayurvedic toothpowder-red	3 (2.3)	6 (4.7)	9 (3.5)	
Nonabrasive white toothpowder	2 (1.6)	1 (0.8)	3 (1.2)	
Ayurvedic toothpaste	7 (5.4)	11 (8.5)	18 (6.9)	
Non medicated toothpaste	107 (82.9)	104 (80.6)	211 (81.8)	
Desensitizing toothpaste	4 (3.1)	5 (3.9)	9 (3.5)	

*First three categories were clubbed when calculating the Chi-square test. NS=Nonsignificant

Table 3: Various oral hygiene instruments used by study population (n=258)*

Instrument	Males (n=129) n (%)	Females (n=129) n (%)	Total (n=258) n (%)	Statistical test
Finger	14 (10.9)	10 (7.8)	24 (9.3)	$\chi^2=0.77$ $P=0.38$, NS
Toothbrush	114 (88.4)	119 (92.2)	233 (90.3)	
Proxa brush	1 (0.8)	0	1 (0.4)	

*Last category was excluded from the statistical analysis. NS=Nonsignificant

Table 4: Frequency of doing oral hygiene procedure by study population (n=258)*

Frequency of oral hygiene	Males (n=129) n (%)	Females (n=129) n (%)	Total (n=258) n (%)	Statistical test
Once	112 (86.8)	100 (77.5)	212 (82.1)	$\chi^2=3.95$ $P=0.04$, S
Twice	16 (12.4)	28 (21.7)	44 (17.1)	
More than twice	1 (0.8)	1 (0.8)	2 (0.8)	
After every meal	0	0	0	

*Last two categories were excluded from the analysis. S=Statistically significant

First bristle toothbrush, resembling modern toothbrush was developed in China and was made up of horse tail bristles and ox bone handle.^[16] In twentieth century, synthetic toothbrushes were produced where natural animal bristles were replaced by synthetic fibers and handles were made up of thermoplastic materials.

Now, modern oral hygiene materials include nonabrasive toothpowders and toothpastes, toothbrushes, proxa brushes, dental floss, tongue cleaners, and mouthwashes. Basic idea is to remove debris and deposits from surfaces of teeth and to restrict growth of bacteria, which cause oral and dental diseases. The current study on oral hygiene methods practiced by the patients attending OPD at a Tertiary Care Hospital reports the various commonly used materials and instruments, and frequency of its use.

Material used by participants for oral hygiene

The nonmedicated toothpaste came out as the most commonly used material for teeth cleaning in the current study. The similar studies by Oberoi *et al.*, Kapoor *et al.* also showed the use of this material to be at 84.4 and 90.3%, respectively.^[4,5] These are now over the counter (OTC) products available at chemist shops as well as in grocery stores including malls. They have found their place in every urban home in modern day India.

India is the land of Ayurveda; the participants using ayurvedic toothpastes were next in number at around 7%. Moreover, they were followed by 3.5% participants who used red ayurvedic toothpowder which is not abrasive as compared to black powders containing charcoal. Persons who used Datun were 3.1%. Thus, a total of 13.5% participants used ayurvedic materials for the purpose of cleaning their teeth.

It seems that Datun is not as popular today as it was earlier. Oberoi *et al.* reported 1.2% patients using datum whereas Kapoor *et al.* reported 4.4% patients using datum.^[4,5] Kapoor *et al.* also observed that the use of datum was more common in rural areas compared to urban. A study by Singh *et al.* reports a much higher proportion, i.e., almost 21% people using datum where the entire study population is coming from villages of rural Lucknow.^[6] The low proportion in the current study may be because of the fact that Gujarat is a relatively urbanized state with rapidly moving economy compared to Uttar Pradesh. Moreover, participants in our study were mainly urban.

The current study reported the use of desensitizing toothpastes by as high as 3.5% of the studied population. These are mostly prescribed by dentists for treatment of dentinal sensitivity. Since our study population was patient

attending the OPD for treatment, this may be a little higher compared to the proportion of people using it at community level. Details about the desensitizing agent in paste used were not obtained in the current study.

Very few patients in the current study used nonabrasive white toothpowder. Oberoi *et al.* and Kapoor *et al.* reports only 8% and 4.8% patients, respectively, using it.^[4,5] However, Singh *et al.* reported that nearly 60% of their patients reported using finger and a white powder.^[6] This means that white powder is still a wide choice among rural areas. The inconvenience of using it has led to its disappearance from most of the urban homes now.

A good finding was that none of the subjects in the current study used black toothpowder. These home-made or commercially available black toothpowders which were used earlier contained gritty particles of charcoal, which is believed to be quite abrasive for enamel, and on long-term use, may damage enamel.

Instrument used by participants for oral hygiene

Almost 90% of the patients in the current study were using toothbrush as cleaning instrument making it the most commonly used instrument. Study by Oberoi *et al.* also showed similar observation with 83.6% of their patients using toothpaste and toothbrush for cleaning teeth.^[4]

As discussed earlier, the use of finger for cleaning teeth was low in this study as well as study by Oberoi *et al.*^[4] The same was highest at 60% in the study by Singh *et al.* in rural Uttar Pradesh.^[6]

It was interesting to note the use of interdental cleaning devices. Use of proxa brush and dental floss was almost negligible in the current study. This was same as the finding from study by Oberoi *et al.* and Jain *et al.* from Jodhpur, Rajasthan, India, in 2012.^[4,7] Only Kapoor *et al.* reported 10% use among their patients.^[5] However, the American Dental Association recommends daily use of dental floss. In addition, the use of dental floss is higher in developing countries. Hamilton and Coulby reported dental floss use as high as 44% among high school students from Canada.^[9] Whereas studies from other developing countries such as Saudi Arabia shows very low use.^[10]

Nevertheless, it is important to note that the current study population being OPD attendees the use of dental floss among them is expected to be higher compared to the general population. The low use here indicates that

he use of dental floss as inter-dental cleaning device has not been popular among Indians.

Frequency of oral hygiene

Several studies have been conducted regarding the frequency of the oral hygiene practices. The most commonly reported frequency for oral hygiene practices has been reported to be 1–2 times a day. The current study reports only 17% patients brushing teeth twice daily, which is the recommended frequency among the general population. Among these dental patients, the frequency should be more than twice daily. Oberoi *et al.*, Kapoor *et al.*, and Jain *et al.* also reported low proportions of 44%, 25%, and 23% of their studied population brushing the teeth twice daily.^[4,5,7] Dilip in a study among police recruits finds as high as 58% study population brushing twice daily.^[8] Among other countries, study from Kuwait reports 62% people brushing twice daily.^[11] Such higher proportion was also reported by the Chinese middle-aged people at 50% and elderly at 75% in a study by Zhu *et al.*^[12] Another Chinese study among urban adolescents also reports high proportion of 67% population brushing twice daily.^[13]

None of the study participants in the current study reported performing oral hygiene procedure after every meal. These findings indicate that there is an immense need of educating people about frequency and timing of brushing their teeth. Brushing after every meal and also before going to sleep at nights is very helpful in prevention of dental diseases. Awareness must be created among public about this.

Limitation of study

The current study is a hospital-based cross-sectional study. To get information on the population level practices, a population survey can give a more representative picture about the oral hygiene practices. In addition, we could not collect information on the brushing technique.

CONCLUSION

Good number of people used modern oral hygiene material and instrument, i.e., nonmedicated toothpaste and toothbrush. However, the frequency and timing for oral hygiene were not satisfactory. For prevention of dental diseases, it is required that public should be explained about importance of brushing their teeth at least twice a day, of this once should be before going to sleep at night; and if possible, after every meal also. Also, the use of dental floss should be increased among the study population.

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Conflicts of interest

There are no conflicts of interest.

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