Factors influencing choice of oral hygiene products used among the population of Udaipur, India.
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Abstract
Aim and Objective: aim of the study was to know the factors that influence the selection of oral hygiene products among population of Udaipur, India. Material and Methods: An epidemiological survey was conducted by using a sample of 500 urban people. Data was collected by means of a self administered structured questionnaire containing 13 items to know the criteria used for selection of the oral hygiene products among the population of Udaipur, India. The data was analyzed using the SPSS version 13.0. The frequency of distribution and percentages were calculated. Results: results of the study showed that tooth brush (94.4%) and toothpaste (90.6%) were the main products used for the maintenance of oral hygiene. Only 7.8% of the people used other oral hygiene aids. The most commonly used tooth brushes were of soft bristle consistency (59.60%). The most commonly used brand of tooth brush and toothpaste was Colgate (26.60% and 36.2% respectively). Information from the media was the most influential factor in selection of a particular brand of tooth brush (33.60%) and toothpaste (39.6%). Conclusion: selection of oral hygiene products was based more on information from media and there seems to be a lack of knowledge and awareness about content of a tooth paste/ powder, so education of people for the importance of oral hygiene maintenance, proper selection and method of use of oral hygiene products is needed.
Key words: Oral Hygiene, Oral Hygiene Products, Awareness.

Introduction:
The oral health is now recognized as equally important in relation to general health. The oral cavity is the ‘mirror’ of general health. Various factors like nutritional status, tobacco smoking, alcohol, hygiene, stress etc. are linked to a wide range of oral diseases forming the fundamental basis of the common risk factor approach (WHO 2000) to prevent the oral diseases.1 Among these oral hygiene is the most significant factor when it comes to prevention of oral diseases and preservation of oral health.
The best way of maintaining good oral hygiene for good health of oral tissues is by "Plaque Control" since plaque is a main factor responsible for dental and gingival diseases.
Tooth brush and tooth paste are the most widely used oral hygiene aids. Apart from these two, there are other oral hygiene aids which are used by people either by advice of a dentist or voluntarily. Factors like education, income, information from media (advertisements) and personal choices like taste / flavor, color, appearance have effect on choice of an oral hygiene product by people. Previous studies have shown that mass media, dental professionals, and dental literature are the main sources of oral health information.2 There is a lot of information available about various oral hygiene aids used for the
maintenance of oral hygiene but the reason why people use a particular product is ignored. So the present study was conducted to understand the factors that influence the choice of oral hygiene product for the maintenance of oral hygiene, among the population of Udaipur, India.

**Materials and Methods:**
An epidemiological survey was conducted for a period of 3 months to understand the factors influencing the choice of oral hygiene products among urban population of Udaipur, India.

*Study design:*
A cross-sectional survey.

*Study proforma:*
Data was collected by means of a self administered structured questionnaire written in English and validated through a pilot survey. The questionnaire contained 13 multiple choice questions related to the material used to clean the teeth, the type of tooth brush used (according to the bristle consistency), frequency of brushing, time interval before the change of tooth brush, brand of toothbrush and tooth paste/powder used, reason for choosing the particular brand of tooth brush and tooth paste/powder, any other oral hygiene aid used, the brand of the other oral hygiene aid used and reason for choosing that particular brand.

*Official permission and ethical approval:*
Before the start of the survey, official permission and ethical approval was obtained from the ethical committee.

*Methodology:*
The Udaipur city was divided in 4 different zones. Dental examination camps were organized in these zones. On the pre decided dates of the camps, the investigator visited these zones and invited all the available people 18 years and above to participate in the survey. The purpose of the study was explained and a written consent was obtained from all those who were willing to participate in the survey. The study population consisted of 500 urban people from Udaipur city, belonging to different ages (18 years and above), sex and socioeconomic status. Each participant was asked to respond to each item according to the response format provided in the questionnaire. The participants received a full explanation of how to fill in the questionnaire and were assisted by the investigator to do so if uneducated. Anonymity of the respondents was assured.

*Statistical method:*
The data obtained was analyzed using the Statistical Package for Social Sciences version 13.0 software (Chicago, Il. USA.). The frequency of distribution was calculated followed by the percentage.

*Results:*
Of the 500 people who participated in the survey 66.60% were males and 33.40% were females.

Results of the study showed that tooth brush and toothpaste were the main products used for the maintenance of oral hygiene. Toothbrush was used by 94.4% of people (Fig.1); toothpaste by 90.60% of the people and 8.4% people used tooth powder with/without toothbrush as a cleaning material. (Fig. 2)

The most commonly used tooth brushes were of soft bristle consistency (59.60%), followed by medium
bristle consistency (17.00%) and then super soft bristle consistency (13.00%).

The bristle consistency of their tooth brush was not known to 4.6% of the people (Fig. 3). The percentage of once daily brushing was 77.60%, whereas 22.00% of the people brushed their teeth at least two times in a day.

When asked about frequency of change of tooth brush, the replies given by 44.60% of the people fell in the range of after 2-4 months, followed by after 1-2 months by 28.80% of people, followed by after 4-6 months by 18.20% of the people and 2.00% people changed their tooth brush after 6 months.

The most commonly used brand of tooth brush was Colgate (26.60%) followed by, Oral B (17.80%). The percentage of population unaware of the brand of the tooth brush was 12.80%.

The most commonly used brand of tooth paste was Colgate (36.20%) followed by, Pepsodent (14.20%) and Close up (12.80%). (Data not shown)

Information from the media was the most influential factor in selection of a particular brand of tooth brush. The percentage of people selecting their tooth brushes after seeing the advertisements on the television, news papers, cinema halls or hearing the advertisements on the radio was 33.60, whereas 16.40% of the people chose a toothbrush by brand name, followed by 12.00% of people doing selection based on the cost of the tooth brush and 10.40% of the people selecting their tooth brush according to the advices of peers. Only 7.00% of the people selected their tooth brush according to the dentist’s advice. The appearance of a tooth brush (4.8%) and parental guidance (4%) were the least important factors in selection of a toothbrush. (Fig. 4)

In the selection of a brand of tooth paste/tooth powder, the most influential factor was information from media (39.60%). The flavor added in the tooth paste/tooth powder and brand name (16.00% for both) were the second most important factors in selecting the tooth paste/toothpowder. Only 4.80% of people went by the advice of the dentist in selecting a tooth paste. The cost, color, foaming action were the least important factors for selection of a tooth paste. (Fig. 5)

Only 7.8% of the people used other oral hygiene aids other than tooth brush and tooth paste/tooth powder.
Among the users of oral hygiene aids other than toothbrush and toothpaste, mouth washes (64.10%) were the most commonly used products followed by toothpicks (17.94%) and Dental floss (15.38%). (Fig. 6)

The most commonly used brand of mouth wash was Listerine. The selection of other oral hygiene aids was more by dentist’s advice (48.72%), followed by brand name (25.64%). Information from media (10.26%) was the third most important factor in the selection of the other oral hygiene aids, the others being not very significant. (Fig. 7)

Discussion:
Oral hygiene practices in India are deeply based in tradition and culture with use of indigenous substances being widely prevalent. As the present study was conducted in the urban population, where most of the people are educated, toothbrush and toothpaste use was expected to be more. Though toothbrush and toothpaste were the main products used for the maintenance of oral hygiene among the population of Udaipur, the percentage of toothbrush use was less (94.4%) compared to other educated groups of people like, 97% of the police recruits in a study by Dilip (2005) and 98% of Anganwadi workers in Karnataka in a study by Pankaj et al (2005).

The toothpaste use was found to be more (90.6%) compared to 82% of the police recruits in a study by Dilip (2005) and was less compared to 98% of the Anganwadi workers in a study by Pankaj et al (2005) in Karnataka.

The toothbrush and toothpaste use is the most effective way of cleaning the teeth and maintaining the oral hygiene. In present study the percentage of people using soft bristle toothbrush was more compared to medium or hard bristle brush users. Though the effect of the bristle consistency on the efficiency of cleaning is not been proved, the soft bristle brushes are likely to cause less damage to the tooth structure and the gums (gingiva).

To maximize the oral health, the ADA and US Surgeon General recommend that individuals brush twice and floss at least once a day and have regular prophylactic dental visits.

In present study, the percentage of people brushing at least twice daily (22%) was lower compared to 58% of the Police recruits in a study by Dilip(2005), 67% of the Chinese urban adolescents in a study by Jiang et al (2005), 62% of the Kuwaiti adults in a study by Al-Shammari et al (2007), and 50% of the middle aged and 75% of the elderly Chinese adults in urban areas in a study by Zhu et al (2005) and was higher compared to the 44.4% of the Chinese adolescents in a study by Zhu et al (2003) and 20% of the Anganwadi workers in a study by Pankaj et al (2005).
A toothbrush with frayed bristles might be less effective in plaque bio-film removal and more harmful to the tooth structure. In present study, 44.6% of the people changed their brush after 2-4 months followed by 28.8% every 1-2 months, 18.2% after 4-6 months followed by 2% who changed their toothbrush after 6 months. Whereas in a study by Dilip (2005), 53% changed their toothbrush within 6 months, 12% after a period of 6 months and 35% changed their toothbrush when it was worn out.

As mentioned before, previous studies have shown that mass media, dental professionals, and dental literature are the main sources of oral health information. In present study 33.6% of the population chose their tooth brushes and 39.6% people selected their toothpaste by getting information from media, 16.4% for toothbrush and 16% for toothpaste by brand name also 16% by flavor for toothpaste selection, followed by 12% by cost of the toothbrush and 10.4% of people selecting their toothbrush according to the advices of peers. A very less number of people (7% for toothbrush and 4.8% for tooth paste selection) go by advice of dental professionals, whereas in a study by Dilip (2005), the respondents gave the source of information as magazines (17%), television (12%), social worker and dentist (10%) and radio (8%). The effect of mass media as a source of public awareness seems to be more in present study. So, the dental professionals need to work more effectively with the manufacturers to support the dissemination of helpful information and facts about the oral hygiene products through the media. The less percentage of people choosing their oral hygiene aids by the advice of the dental professionals (7% for toothbrush and 4.8% for tooth paste selection), found in the present study might be either because the dental professional are unable to give much time out of their busy schedules for giving information to the people about the oral hygiene aids available and proper selection and use of them or because people are not availing the dental health care facilities.

The use of other oral hygiene aids like dental floss, toothpicks and mouthwashes helps in keeping the good oral hygiene and maintaining the health of the oral cavity.

In present study only 7.8% of people used oral hygiene aids other than toothbrush and toothpaste/tooth powder, whereas in a study by Al-Shammari (2007) et al use of dental floss was by 11.8% people. Zhu et al (2005) in their study showed use of dental floss by 4.1% and regular use of toothpicks after meals by 36% of the respondents. Overall, the percentage of people using other oral hygiene aids was less (7.8%) and the selection of these aids was mainly based on the dental professional’s advice. So to make people more aware of the different oral hygiene aids available, proper selection and use of these aids, the dental professionals should take more time out of their busy schedules.

**Conclusion:**

Selection of oral hygiene products was based more on information from media, followed by brand name and cost in selection of a tooth brush and flavor added for selecting a tooth paste/tooth powder. The percentage of people using oral hygiene aids other than tooth brush and tooth paste was very less. So the dental professionals should take more time out of their busy schedule to educate and motivate people about the oral hygiene maintenance, proper selection and use of the oral hygiene aids as well as work in alliance with the manufacturers to disseminate.
helpful information and facts about the oral hygiene products through the media.

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