

Knowledge, Attitude and Practices Related to Selection of Toothbrush and Tooth Brushing Habits

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ABSTRACT

Maintaining effective oral health is crucial for overall well-being, and the cornerstone of oral care lies in proper toothbrush selection and brushing habits. This cross-sectional study conducted in Western Maharashtra aimed to evaluate the knowledge, attitude, and practices of the general population regarding these key aspects. The study, utilizing a questionnaire distributed through online platforms, gathered responses from 410 participants. The majority of respondents were graduates (56.8%), and 55.1% were male. The questionnaire, comprising 20 questions, explored participants' understanding of toothbrush selection, brushing habits, and associated practices. Results revealed a significant gap in knowledge, with a majority being aware of the importance of toothbrush use but lacking adequate information on various brushing techniques and proper toothbrush storage. Despite efforts to create awareness, a considerable portion demonstrated varied practices, highlighting the need for targeted oral hygiene education. In conclusion, this study sheds light on the existing disparities in knowledge and practices related to oral hygiene in Western Maharashtra. The findings underscore the importance of tailored educational interventions to enhance public awareness and encourage optimal toothbrush selection and brushing habits for improved oral and general health.

Keywords. toothbrush, tooth brushing habits, oral hygiene, dental care, knowledge, attitude, practices, general population, Western Maharashtra, questionnaire, survey, education level, cross-sectional study, data analysis, awareness, oral health, plaque control, brushing techniques, statistical analysis.

I. INTRODUCTION

Oral cavity is considered to be the mirror of general health of the person and it is of more concern when it comes to general population. Effective oral health can reduce various complications and helps in promoting good general health. To maintain good care of the oral tissues, it demands the preservation of worthy oral hygiene which can be achieved by plaque control as it causes numerous gingival and dental maladies. To provide good oral health, they must understand the complexities and also have the knowledge about the oral health care. The general population is unaware of the deleterious conditions which are caused due to faulty selection of toothbrush and tooth brushing habits which may even affect the general health of an individual. Thus, the current study aims to evaluate the knowledge, attitude and practice related to the selection of toothbrush and tooth brushing habits.

Patient's oral care is defined as the practice of keeping the oral cavity healthy through cleaning of tongue, gums, lips, teeth and dentures (Better, 2012; Bonetti, 2015). Poor oral health causes oral discomfort, pain, and impact on chewing and swallowing that affect diet and fluid intake. Gingivitis and dental caries share a common risk factor that is plaque, so the best way to maintain good oral hygiene for good health of oral tissues is by "plaque control". Professional plaque removal at proper intervals along with the recurrent reinforcement and suitable combination of oral hygiene instructions and guidance can help to achieve good plaque control. Commonly used oral hygiene measure to remove plaque is tooth brushing and proper brushing technique.

But oral hygiene care is often neglected and not prioritized in daily activity plan. One of the most commonly neglected aspect of oral hygiene maintenance is proper selection and utilization of oral hygiene aids. So, it is necessity of time to assess the level of awareness among the general population. This will help us to plan strategies to create awareness and introduce proper practices of using toothbrush and tooth brushing techniques to prevent dental maladies by selecting proper bristled toothbrushes, purpose of its use, duration to change the toothbrush and application of all these knowledge among the individuals. Thus, there is a need to give a proper oral hygiene instructions for proper reinforcement of toothbrush selection and adaptation to tooth brushing habits.

II. METHOD

This research employs a cross-sectional study design to thoroughly examine the knowledge, attitude, and practices related to toothbrush selection and tooth brushing habits within the general population of Western Maharashtra. Ethical approval was obtained from the Institutional Ethics Committee at KIMSDU (Reference: KIMSDU/IEC/03/2022).

A meticulously crafted close-ended questionnaire, comprising 20 questions categorized into knowledge, attitude, and practices domains, served as the primary tool for data collection. The questions covered various facets, including factors influencing toothbrush selection, preferred brushing techniques, and habits. This ensured a comprehensive understanding of participants' oral health behaviors.

The participant recruitment strategy involved reaching out to the target population through diverse online platforms. A Google Form link facilitated easy and voluntary responses from participants. Demographic information, including gender and education level, was gathered to provide context to the study findings.

Data collection encompassed a thorough review of completed questionnaires, with stringent criteria to exclude incomplete or inconsistent responses. A total of 410 responses were included for further analysis. Statistical methods, predominantly descriptive statistics, were applied to derive meaningful insights from the collected data.

The study acknowledges potential limitations, such as the reliance on self-reported data and the specificity of the study's geographical focus on Western Maharashtra, which may impact the generalizability of findings. Nonetheless, this rigorous methodology ensures a systematic and ethical approach, laying the foundation for a nuanced exploration of oral hygiene practices in the study population.

a. Study design

This is a cross-sectional based study (survey) was carried out among the general population of Western Maharashtra to assess knowledge, attitude and practices related to selection of toothbrush and tooth brushing habits among the individuals. The ethical clearance was obtained from KIMSDU, before commencing the study (KIMSDU/IEC/03/2022).

b. Development of questionnaire

A specially designed close ended google form was created consisting of 20 questions. The questionnaire includes wide range of questions based on three domains - knowledge, attitude and practices about toothbrush selection and tooth brushing habits. The questionnaire and observational checklist was constructed so as to achieve the objectives of the study, which consisted of two parts; the first part is concerned with the -age, gender, level of education; the second part consists of 20 items on the general information about the selection of toothbrush and tooth brushing habits among the general population.

c. Distribution of questionnaire

The questionnaire was sent to general population of western Maharashtra using various online platforms, with a google form link to the questionnaire and the responses were collected.

d. Data collection

Data was collected, the questionnaires were reviewed and incomplete forms were omitted. 410 responses were collected and further statistical analysis was done to obtain the results.

III. RESULTS AND ANALYSIS

This is a questionnaire-based study among the 410 subjects participated in the survey 55.1 % were males and 44.9 % were females. Among the people participated 19.8 % were postgraduates, 56.8 % were graduates, intermediates were 12.2 %, high school certificates were 10.5 %, primary school certificate were 0.7 %.

Sex	%
Males	55.1%
Females	44.9%
Education	%
Postgraduates	19.8%
Graduates	56.8%
Intermediates	12.2%
High school certificates	10.5%
Primary school certificate	0.7%

Table 1. Questionnaire Analysis

IV. KNOWLEDGE

When main purpose of brushing was asked 81.7 % subjects chose both clean bright teeth and prevention of tooth decay /gum diseases, while 12.4 % choose prevention of tooth decay /gum diseases & 5.6 % choose clean bright teeth. When questioned about newer advances like electric or sonic toothbrush 68.5% were aware and 31.5 % were not. When the subjects were enquired about how they get to know about the type of bristles 81.2 % subjects chose according to what was written on the box, 12 % asked the dentist and 6.8 % asked the shopkeeper.

84.9 % agreed that toothbrush bristle can make a difference in efficacy of toothbrush to remove dental plaque and 15.1 % disagreed. When enquired about the additives to the toothbrush bristles 62.4 % agreed that it will improve the dental plaque while 37.6 % disagreed. 66.3 % subjects were aware about the increased chances of microbial contamination when stored inside the bathroom and 33.7 were not aware. The cleaning efficacy of toothbrush can be affected due to the shape n design was accepted by 79.8 % of subjects and 20.2 % disagreed.

87.1 % subjects agreed that hardness of toothbrush bristles affect mechanical tooth wear and 12.9 % disagreed. Angulated bristle design is superior to regular bristle design in plaque removal on which 76.1 % subjects agreed while 23.9 % denied. 56.6 % subjects agreed that the toothbrush needs to be disinfected with antiseptic solution and 43.4 % disagreed.

According to you what is the purpose of toothbrushing	%
Clean bright teeth	5.6%
Prevention of tooth decay /gum diseases	12.4%
Prevention of oral ulcer	0.3%

Both a & b	81.7%
Are you aware about availability of advanced toothbrushes like electric , sonic toothbrush	%
Yes	68.5%
No	31.5%
How do you get to know about type of bristle present in toothbrush while buying	%
Written on the box of toothbrush	81.2%
Ask the dentist	12%
Ask the shopkeeper	6.8%
Do you think toothbrush bristle design will make a difference in efficacy of toothbrush to remove dental plaque ?	%
Yes	84.9%
No	15.1%
Do you think additives to the toothbrush bristles (like neem ,charcoal)will improve the dental plaque removal ?	%
Yes	62.4%
No	37.6%
Do you know that storage of your toothbrush inside the bathroom increases the chances of its microbial contamination	%
Yes	66.3%
No	33.7%
Do you think that toothbrush head shape/design will affect cleaning efficacy of the toothbrush	%
Yes	79.8%
No	20.2%
Do you think hardness of toothbrush bristles will affect mechanical tooth wear	%
Yes	87.1%
No	12.9%
Do you think that angulated bristle design is superior than regular bristle design in plaque removal	%
Yes	76.1%
No	23.9%
Are you aware that toothbrush needs to be disinfected periodically with antiseptic solution	%
Yes	56.6%
No	43.4%

Table 2. Knowledge

V. ATTITUDE

Toothbrush selection varied according to different factors most of them choose toothbrush based on the brand name 42.2 % , some people seek advice from dentist 35.1 % ,people were influenced by advertisements by 9.3 % , 7.1 % people choose the toothbrush based on cost & 6.3 % according to advice of peers.

Based on the duration of use 52.4 % people choose to change their toothbrush, while 44.1 % changed based on fraying of toothbrush bristles ,2.1 % changed their toothbrush according to new designs available ,1.4 % changed after the breakage of toothbrush handle .

Technique most commonly used while brushing was circular strokes 38.8 %, followed by horizontal strokes 25.1 %, irregular or random strokes 18.8 %, 13.4 % used vertical strokes and 0.9 % used short vibratory strokes.

Toothbrush selection is based on	%
Advertisement	9.3%
Brand name	42.2%
Based on cost	7.1%
According to advice of peers	6.3%
Dentist advice	35.1%
How do you decide that your toothbrush needs to be changed	%
Based on fraying of toothbrush bristles	44.1%
New toothbrush design available	2.1%
After breakage of toothbrush handle	1.4%
Based on duration of use	52.4%
Technique you use while brushing	%
Horizontal strokes	25.1%
Vertical strokes	13.4%
Circular strokes	38.8%
Irregular /random strokes	18.8%
Short vibratory strokes	0.9%

Table 3. Attitude

VI. PRACTICE

The most commonly used toothbrushes were medium bristled 52.4 % followed by soft bristled 39 % and extra soft bristles 6.1 % and 2.5 % used hard bristles toothbrush. The frequency of brushing among the individuals was maximum for twice daily 54.6 %, 44.1 % for once daily and 2.3 % did thrice daily. In relation to frequency of change of toothbrush 57.6 % of subjects changed within 1-3 months followed by 26.3 % changed within 4-6 months and 12.4 % changed when toothbrush hair worn out & 3.7 % changed after 7 to 12 months.

In relation to duration most of the subjects 55.6 % brushed their teeth for 2-3 min followed by 24.6 % brushed for 4-5 min, 15.6 % for 30 sec-1 min and 4.2 % above 5 min. When questioned about tongue cleaning 83.9 % cleaned their tongue while 16.1 % did not. In relation to storage of toothbrush 47.3% stored outside the bathroom , 31 % stored it inside the bathroom and 19.5 % stored in the closet and the rest stored it either near the washbasin , cupboard etc. 57.3 % used toothbrush cap immediately after washing the toothbrush and 42.7 % used after drying the toothbrush.

What type of toothbrush bristles do you use	%
Soft	39%
Medium	52.4%
Hard	2.5%
Extra soft	6.1%
How many times do you brush your teeth in a day	%
Once	44.1%
Twice	54.6%
Thrice	2.3%

At what interval do you change your toothbrush	%
1-3 months	57.6%
4-6 months	26.3%
7-12 months	3.7%
Whenever toothbrush hair is worn out	12.4%
How long do you take to brush your teeth	%
30sec-1min	15.6%
2-3min	55.6%
4-5min	24.6%
>5min	4.2%
Do you clean your tongue while brushing	%
Yes	83.9%
No	16.1%
Where do you store your toothbrush	%
Outside the bathroom	47.3%
In closet	19.5%
In bathroom	31%
Others	2.2%
If you use toothbrush cap , when do you use it ?	%
After drying the toothbrush	42.7%
Immediately after washing the toothbrush	57.3%

Table 4. Practice

VII. DISCUSSION

The present study gives a unique assessment of the experience and attitude of people towards toothbrush and tooth brushing habits. With passing time, humans have developed and thought about dental health and practices modernizing every day. When discussed about the purpose of tooth brushing majority of the subjects agreed on clean bright teeth and prevention of tooth decay and gum diseases while in a study by alsadiq -et-al mostly the subjects agreed on prevention of tooth decay and gum diseases. Majority of the subjects knew about the toothbrush bristles as it was written on the box, while in Dr. Kotes study <50% subjects knew that the type of toothbrush bristle was written on the box of the toothbrush.

Lesser number of subjects around 45% selected their toothbrush according to the brand name while in Dr. Kotes study the condition was similar. When discussed about the change of the tooth brush majority of subjects in study changed their toothbrush based on fraying of toothbrush bristles followed by duration of use of the tooth brush. Circular strokes was the most common technique used for tooth brushing in both the studies i.e. alsadiq-et-al study and the subjects were not aware about the proper brushing techniques to be used according to their age and periodontal status of the oral cavity. The most commonly used toothbrush bristles are medium type and when compared with others studies the % obtained was almost the same.

When questioned about the frequency of toothbrushing majority of the subjects brushed twice daily and changed it within 1-3months, 2-3 min was the maximum time the subjects required to brush their teeth. Most of the population were aware about tongue cleaning while brushing, whereas in other studies like alsadiq-et-al study it was comparatively less. A very few number of subjects stored their tooth brush outside the bathroom which causes less contamination compared to when kept inside the bathroom having more number of microorganisms contamination to occur is more .>50% of subjects used their toothbrush cap immediately after brushing ; there are some ongoing studies which are still about to get results for the same but the tooth brush need not to be kept immediately into the cap as the brush is wet and the amount of contamination to occur is more due to presence of more moisture.

VIII. Conclusion

In conclusion, this study offers a nuanced examination of individuals' perceptions and practices concerning toothbrush selection and tooth brushing habits in Western Maharashtra. The findings underscore the evolving nature of oral health consciousness, with participants emphasizing clean and bright teeth, alongside the prevention of tooth decay and gum diseases. Comparisons with previous research, such as Alsadiq et al. and Dr. Kote's studies, reveal both consistencies and variations in public awareness. Notably, the majority of participants in this study were aware of toothbrush bristle details, demonstrating a positive trend in consumer education. However, challenges persist, with a significant number selecting toothbrushes based on brand names. The study highlights noteworthy trends in toothbrush replacement, with an emphasis on changing brushes due to bristle fraying and considering the duration of use. The prevalence of circular brushing techniques and limited awareness of age-specific and periodontal-specific methods suggest an opportunity for targeted oral health education. Insights into brushing frequency, duration, tongue cleaning practices, and toothbrush storage contribute a holistic understanding of participants' oral hygiene behaviors. The observation that >50% of subjects used toothbrush caps immediately after brushing prompts a consideration of optimal storage practices. In conclusion, while participants demonstrate a commendable awareness of certain oral hygiene aspects, there remains room for improvement, particularly in addressing misconceptions and promoting evidence-based practices. This study not only contributes to the existing literature on oral health but also underscores the need for tailored educational interventions to enhance public awareness and foster optimal toothbrush selection and brushing habits for improved oral and general health in Western Maharashtra.

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