

ASSESSMENT OF TONGUE CLEANING HABIT AMONG THE PATIENTS VISITING A DENTAL HOSPITAL IN KATHMANDU

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ABSTRACT

The aim of this study was to assess the tongue cleaning habit among the people to maintain and improve the quality of oral hygiene. This cross-sectional study was conducted in outpatient department of People's Dental college and hospital, department of Community Dentistry among 312 patients 185 female and 127 male between 18-60 years. The self-administered questionnaire consisted of two parts. The first part consisted of socio-demographic details of participants (age, sex, education and occupation). The second part consisted of 17 questions related to tongue cleanliness behavior. Self-constructed questionnaire was adopted from previous study. Data analysis was done by using SPSS 20 version and descriptive statistics were calculated. Out of total 312 participants, 53.8% had a tongue cleaning habits. Sixty nine percent participants cleaned the tongue every day. About two-thirds 65% used toothbrush. Nearly 62% of the participants took 15-30sec for tongue cleaning. Fifty percent cleaned the entire tongue. Eighty nine percent started the tongue cleaning about a year ago. Nearly 75% respondent cleaned tongue on their own without any suggestion from other persons. About 64.3% of the participants were not feeling unpleasant sensation after tongue cleaning. Nearly more than half 56 % had gagging reflex by using the tongue cleaner. About 53% (n=98) female were having a habit of tongue cleaning. About 30-39 age group 62.1% non-smokers and 57.4% had tongue cleaning habit. About 54.7% drinking tea / coffee had tongue-cleaning habits. In conclusion tongue cleaning habit helps to prevent halitosis, stains, tongue coating and maintain oral hygiene. In this population, more than half reported tongue cleaning habit.

KEYWORDS

Oral hygiene, smoking, tongue cleaning habits, tongue coating

Received on: February 17, 2023

Accepted for publication: May 22, 2023

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DOI: <https://doi.org/10.3126/nmcj.v25i2.56053>

INTRODUCTION

Oral hygiene is the condition or practice of maintaining the tissues and structures of the mouth in a healthy state.¹ Maintaining good oral hygiene is considered a lifelong habit, and these oral habits are said to begin in an early stage of life.² Good oral hygiene is the foundation of a healthy mouth and prevents 80% of all dental problems.³ Healthy oral cavity is of great significance for an individual's overall health and well-being. Further, it enables an individual to masticate, speak and socialize without any active discomfort or embarrassment.⁴ In Nepal, ever since the commencement of National Oral Health Policy in year 2004, there has been significant amount of dental problems identified but still at present the prevention and treatment of oral diseases is virtually unavailable to the rural and underprivileged population due to various educational, cultural and socioeconomic burdens.⁵ Tongue hygiene is being practiced routinely worldwide for centuries.⁶ However, in the last decades, not many research studies on tongue cleanliness have been published, may be because of the need to concentrate on the protection and treatment of the hard dental tissues and their supporting structures. Fortunately, in the recent years, with the increasing scientific knowledge of tongue biofilm, there has been a growing interest in the study of the tongue hygiene and its relationship with halitosis, including therapeutic implications aimed at the tongue biofilm.⁷ The tongue occupies about a third of the surface area of the oral cavity. Papillary structure of its dorsum makes it the largest oral surface and favors the accumulation of small particles. Consequently, the tongue dorsum harvests mostly oral microbes that aggregate with detached epithelial cells, food, and saliva and serum components, forming a layer of so-called tongue coating.^{8,9} Daily tongue cleaning was therefore recommended; stating that the best time for it was in the morning on an empty stomach, to prevent vomiting or gagging.¹⁰ For instance, the microbial composition of saliva stimulated by chewing is very similar like the tongue dorsum, and the pH of the oral cavity has been associated with the appearance of the tongue.^{11,12} Furthermore, tongue coating is increased in periodontal disease.^{10,13} Also, periodontitis associated bacteria present in tongue coating have been closely associated with those in dental plaque.^{14,15} Therefore, it is likely that the bacteria in the coating of the tongue act as a reservoir via the saliva for those in the plaque biofilm on the teeth.¹⁶ Hence, the purpose of this study was to assess the tongue cleaning habit among the residents of Kathmandu Metropolitan City.

MATERIALS AND METHODS

A cross-sectional descriptive study was carried out over a period of six months (June to December 2022) in outpatient department of People's Dental Hospital, Department of Community Dentistry. Institutional Research Committee (IRC) approval was taken (IRC Ref No. 31.2078/079) before carrying out the study and written consent were obtained. A total number of 312 patients belonging to age group 18-60 years and who were willing to participate in the study were included in the study. Convenience sampling technique was used. Data was collected by interview method by using questionnaire. The questionnaires were adopted from previous studies and modified after consultation with the experts related to the field.¹⁷ The self-administered questionnaire consisted of two parts and translate from English to Nepali language. The first part consisted of socio-demographic details of participants (age, sex, education and occupation). The second part consisted of 17 questions related to tongue cleanliness behavior. Exclusion criteria included disabled people with limited manual dexterity and illiterate people. Data analysis was done by using SPSS 20 version and descriptive statistics were calculated.

RESULTS

Socio-demographic characteristics of the respondents: This research revealed out of total 312 participants around more than half were female 185 (59.3%) and the remaining were male 127(40.7%). According to education status out of 312 majority of them had attained a to primary school level of education 122(39.1%), 15 (4.8%) post-graduate, high school 103 (33.0 %) and graduate 72 (23.1%). As to the occupational status out of 312, just under half of the subjects were doing private jobs 148 (47.4%), 147(47.1%) unemployed and, 17(5.4%) had a government job.

Out of total 312 participants, 168 (53.8%) reported a tongue cleaning habits. Among those (n=168) over two-thirds of the participants cleaned the tongue everyday 116 (69.0%). Among 168 participants, about two-thirds 109 (64.9%) used a toothbrush, 30 (17.9%) tongue scrapper, 22 (13.1%) tongue brush. Out of 168 participants spent 15-30 seconds on tongue cleaning 104 (61.9%) where few spent minutes 64 (38.1%) for tongue cleaning. Out of 168 participants half (n=84) cleaned the entire tongue, 83 (49.4%) cleaned the center of the tongue alone. Out of 168 participants, started 149 (88.7%)

Table 1: Tongue cleaning practices among the participants

Tongue cleaning habit	n (312)	%
Yes	168	53.8
No	144	46.2
Frequency of cleaning tongue	n (168)	%
Every day	116	69.0
Sometimes	52	31.0
Material used for cleaning tongue		
Tooth brush	109	64.9
Tongue brush	22	13.1
Tongue scrapper	30	17.9
Other	7	4.2
Time spent on tongue cleaning session		
Second	104	61.9
Minutes	64	38.1
Portion of tongue do you clean		
Center of the dorsum of the tongue	83	49.4
Entire tongue(anterior, posterior,lateral,ventral and dorsal)	84	50.0
Others	1	0.6
Duration of starting tongue cleaning		
About a year ago	149	88.7
About a month ago	11	6.5
Within last month	9	4.8
Reasons for starting tongue cleaning		
Recommended by dental professionals'	22	13.1
Public information (eg TV/radio/magazine)	21	12.5
Personal information (eg recommended by friends)	125	74.4
Outcome expected from tongue cleaning		
Prevention of tongue stain	20	11.9
Prevention of tongue coating	90	53.9
Prevention of oral malodor	58	34.5
Feeling of unpleasant sensation after tongue cleaning		
Yes	60	35.7
No	108	64.3
Experience of any reduction of tongue coatings while using the tongue cleaner		
Yes	140	83.3
No	28	16.7
Experience of any reduction of tongue stains while using the tongue cleaner		
Yes	137	81.5
No	31	18.5
Experience of any reduction in the level of bad breath after using the tongue cleaner		
Yes	142	84.5
No	26	15.5
Experience of any improvement in taste after using the tongue cleaner?		
Yes	130	77.4
No	38	22.6
Experience of any gagging reflex while using the tongue cleaner		
Yes	93	55.4
No	75	44.6
Current smoker		
Yes	61	19.5
No	251	80.5
Drink tea coffee		
Yes	258	82.6
No	54	17.4

Table 2: Gender wise distribution of tongue cleaning habits in the study participants

Gender	Tongue cleaning habit		Total
	Yes (%)	No (%)	
Female	98 (53.0)	87 (47.0)	185
Male	70 (55.1)	57 (44.9)	127

Table 3: Agewise distribution of tongue cleaning habits in the study participants

Age group (years)	Tongue cleaning habit		Total
	Yes (%)	No (%)	
< 30	60 (58.2)	43 (41.7)	103
30-39	59 (62.1)	36 (37.9)	95
40-49	25 (52.1)	23 (47.9)	48
50-59	12 (32.4)	25 (67.6)	37
> 60	12 (41.4)	17 (58.6)	29

Table 4: Depicts tongue cleaning habits among the smokers

Current smoker	Tongue cleaning habit		Total
	Yes (%)	No (%)	
Yes	26 (42.6)	35 (57.4)	61
No	144 (57.4)	107 (42.6)	251

Table 5: Shows tongue cleaning habits among the participants drinking tea/coffee

Drink tea/coffee	Tongue cleaning habit		Total
	Yes (%)	No (%)	
Yes	141 (54.7)	117 (45.3)	258
No	29 (53.7)	25 (46.3)	54

cleaning the tongue about a year ago, 11 (6.5%) started a month ago and 9 (4.8%) within last month. About three-fourths 125(74.4%) of the participants started the tongue cleaning due to personal information, others 22 (13.1%) were recommended by a dental professional followed by public information 21 (12.5%). Out of 168 participants 90 (53.9%) believed that tongue cleaning prevented tongue coating whereas 58 (34.5%) believed that it prevented malodor, and 20 (11.9%) thought it prevented tongue stains. About two-thirds of the participants 108 (64.3%) did not experience unpleasant sensation after tongue cleaning. Tongue coating reduction using tongue cleaner was experienced by 140 (83.3%). Out of 168

participants reduction of tongue stains while using the tongue cleaner was 137 (81.5%). A total of 142 (84.5%) experienced reduction in the level of bad breathe whereas 130 (77.4%) participants felt improve taste while using tongue cleaner. Majority of the participants experienced 93 (55.4%) gagging reflex using the tongue cleaner. Out of 312 majority of the participants were non-smokers 251 (80.5%) whereas among 312 drinking tea/coffee 258 (82.6%) (Table 1).

Out of 185 participants 98 (53.0%) female were having a habit of tongue cleaning whereas out of 127 male participated 70 (55.1%) of tongue cleaning habit (Table 2).

Around 103 participants less than 30 years of age, had 60 (58.2%) tongue cleaning habit. whereas among those between 30-39 years, 59 (62.1%). Those aged between 40-49 years, 25 (52.1%) whereas those aged 50-59 years, 12 (32.4%) and those aged 60 years and above 12 (41.4%) tongue cleaning habit (Table 3).

Out of 61 current smokers, 26 (42.6%) had tongue cleaning habits whereas among 251 non-smokers, 144 (57.4%) had tongue cleaning habit (Table 4).

Out of 258 people who were drinking tea / coffee, 141 (54.7%) had tongue cleaning habits which was similar among non-smokers, 29 (53.7%) (Table 5).

DISCUSSION

This study assessed the tongue cleaning habit among the patients visiting a dental hospital in Kathmandu. Our study showed that over half were having tongue cleaning habit which is similar to study conducted in public health center in adult population in Japan.¹⁷ Present study findings supports that most of the participants had a habit of tongue cleaning everyday which correspond with the study conducted in Italy and Brazil in 18 to 50 years adults.^{18,19} Pedrazzi *et al*²⁰ and Buunk *et al*²¹ conducted a study in adults population in Netherland with a habit of tongue cleaning with toothbrush which was similar to our findings. Van der sleen *et al*²² conducted a study in Amsterdam population who clean their tongue within 15-30 sec similar to our presents study. Regarding the duration of tongue cleaning majority of the participants started cleaning cleans about an year ago as well as the reason to clean their tongue was similar to the previous study.¹⁷ There is lack of available evidence with regards to the effects of tongue cleaning; reasons could be poor contribution of dental

health professional regarding information about tongue cleaning.²³⁻²⁵ In the present study 64.3% did not have unpleasant sensation, while cleaning tongue which is similar to study conducted in Japan.¹⁷

Study reported by Yaegaki and Sanada,²⁶ Quirynen *et al*,²⁷ Bosy *et al*,²⁸ in adult population in Toronto for the removal of the tongue coating markedly reduces both volatile Sulphur compounds production and the H₂S/methyl mercaptan ratio, not only in orally healthy subjects but also in patients with periodontal disease is similar to our study. Some studies show that tongue brushing and tongue cleaning diminishes the percentage of volatile sulphur compounds in patients suffering from malodour suggesting the participants had a knowledge of tongue cleaning since prevention of oral malodor is widely accepted similar to our findings.^{28,29}

Study conducted by Christensen,⁶ regarding the tongue cleaner is placed on posterior site force is applied on the scrapper to flatten the tongue so the person feel gag, therefore practice is required to find the right positioning and to minimize gag response which is similar to our study.⁶

Regarding the improvement in taste and experience of usage of tongue cleaner, the possible reason might be there is bacterial load present in the tongue, which may felt uncomfortable to the person so after cleaning with tongue cleaner improvement of taste and good experience feel by the participants.

Regarding the age and gender majority of the females have been said to have better

oral health knowledge,³⁰ because they exhibit greater interest in oral health and consider sound teeth more important than males. These results suggested that a wide range of age groups of the general public have had a great interest in tongue cleaning, indicating that the importance of oral care is widespread not only in medical professionals, but also the general public.

In one study, looking the overall hygiene of the patients because of lack of knowledge, awareness leads to poor oral hygiene is more common, although the people were aware but still were not interested to maintain oral hygiene.³¹ The results of present study is similar to other study regarding tongue-cleaning habits in tea/ coffee drinkers.³²

In conclusion, this study suggested that the public cared about tongue cleanliness and halitosis. Tongue-cleaning using a toothbrush was performed in several different ways for different purposes. There are many new technologies available in market, still awareness should be raised regarding the habits of cleaning the tongue and maintaining the proper oral hygiene.

ACKNOWLEDGEMENT

The authors are grateful for the participants who involved in the research conducted in people's dental college and hospital.

Conflict of interest: None

Source of research fund: None

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