

# Tooth brushing, tongue cleaning and snacking behaviour of dental technology and therapist students

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**Objective:** To determine the tooth brushing, tongue cleaning and snacking behaviour of dental technology and therapist students.

**Methods:** A descriptive cross-sectional study of students of Federal School of Dental Therapy and Technology Enugu, Nigeria. Self-administered questionnaire was used to obtain information on demography, frequency, duration and technique of tooth brushing and tongue cleaning as well as information on consumption of snacks.

**Results:** A total of 242 students responded. Dental technology students made up 52.5% of the respondents and dental therapist in training made up 47.5%. Majority (63.2%) of the respondents considered the strength of tooth brush when purchasing a tooth brush and 78.9% use tooth brushes with medium strength. Sevententh (71.9%) of the respondents brush their teeth twice daily and 52.1% brush for 3–5 minutes. About one-third (30.2%) brush their teeth in front of a mirror. Chewing stick was used by 51.7% of respondents in addition to the use of tooth brush. Tongue cleaning was done by 94.2% with only 9.5% using a tongue cleaner. Only 20.2% reported regular snacks consumption. Nine-tenth (90.4%) of respondents were previously involved in educating others, apart from their colleagues, on tooth brushing.

**Conclusion:** This survey revealed that most of the dental therapy and technology students had satisfactory tooth-brushing behaviour. The zeal to educate others about proper tooth brushing revealed in this study suggests that the students may be helpful in oral health promotion.

Keywords: *toothbrushing; tongue cleaning; snacking behaviour; dental auxiliary students; Nigeria*

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Oral diseases exert a negative impact on an individual's quality of life and also represent a huge burden for healthcare systems worldwide (1). In many low-income countries, the burden of oral diseases is on the increase thus certifying it, a substantial health problem (2) with enormous consequences (3–8). Achieving optimal oral health through preventive efforts is a hallmark of the dental profession (9) and such efforts are geared towards encouraging patients to practice appropriate oral self-care behaviours (9). Achieving optimal oral and dental health requires a commitment to self-care, embracing preventive behaviours as well as the receipt of appropriate professional care. The improvement of personal oral health has been shown to be linked to dental education experience (10).

Dental health providers need to set a good example for their patients by maintaining good oral health since they influence their patients' oral health-related behaviour (11). Dental auxiliary personnel's role in oral health promotion after graduation has been reported (12). Oral health practice of this group should be good and conform to professional recommendations.

Studies have also shown that dental students with positive oral health attitude are good models for oral health behaviour and serve as instructors to their friends, family members, patients and their society on how to maintain good oral health (13–16).

Dental therapists and dental technicians in training will contribute to the realisation of the oral health vision of Nigeria (17). This is because they are equipped with

information necessary for oral health promotion. It is therefore important that their own oral health knowledge is good and that their oral health behaviour conforms to professional recommendations. With proper knowledge and oral health behaviour, they can play an important role in health education of individuals and groups (18–21), and act as role models for lay people and the community at large.

The objective of this study was to determine the tooth brushing, tongue cleaning and snacking behaviour of dental technicians and dental therapist in training. It was also to identify gaps in their oral health behaviour and suggest ways of filling them.

## Materials and methods

A descriptive cross-sectional study of students of Federal School of Dental Therapy and Technology, Enugu, Nigeria was conducted using self-administered questionnaire. All the students in Year 1–4 were included in the study. Data was obtained on demography, frequency and duration of tooth brushing, texture of tooth brush, factors influencing choice of tooth brush, how often tooth brush is changed and why, the use of additional tooth cleaning agent, the practice of tongue cleaning and tongue cleaning agent used, frequency of snacking and types of snacks consumed.

Recruitment was voluntary. Prior to administration of questionnaire, the aim and nature of the study was explained to the participant and informed consent obtained. Students completed the questionnaire anonymously during normal class sessions. Approval for this study was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital.

Statistical Package for Social Science (SPSS version 15.0) was used for data analysis. Frequency distribution and percentages were analysed and presented in tabular and graphic forms. Significance of differences was tested by  $\chi^2$  test and  $P < 0.05$  was considered significant.

## Results

A total of 242 students responded with dental technology students constituting 52.5% and dental therapist students constituting 47.5%. Male:female ratio was 1:1.6. Majority (95.5%) of the respondents were single, in 20–25 year age group (75.2%) and 45% were in the first-year class.

About one-fifth (21.1%) of the respondents brushed their teeth once daily, 71.9% brushed their teeth twice daily and 5.8% brushed more than twice daily (Table 1). More than half (52.1%) spent 3–5 minutes brushing and 30.2% usually checked their teeth in the mirror after brushing (Table 1). Texture of tooth brush used by respondents were soft (17.4%), medium (78.9%) and hard (2.5%) (Table 1). About half (51.7%) also combined chewing stick and only 0.8% use dental floss. The main factors that influenced the choice of tooth brush was

**Table 1.** Frequency and duration of tooth brushing

Parameter	Frequency (no.)	Percentage (%)
Frequency of tooth brush		
Once	51	21.1
Twice	174	71.9
More than twice	14	5.8
No response	2	0.8
Duration of tooth brushing		
1–3 min	57	23.6
3–5 min	126	52.1
> 5 min	56	23.1
No response	3	1.2
Use of mirror		
Yes	73	30.2
No	164	67.8
No response	5	2.1
Texture of tooth brush		
Soft	42	17.4
Medium	191	78.9
Hard	6	2.5
No knowledge	1	0.4
No response	2	0.8
Total	242	100.0

strength (63.2%), brand 12.8% and size (10.3%), cost (1.2%), combination of factors (4.2%), no special consideration (5.8%) and no response (2.5%) (Table 1).

Four-tenth of the respondents replaced their tooth brush every 3 months. Fraying of tooth brushes was the most common reason for tooth brush replacement (Table 2).

Tongue cleaning was carried out by 94.2%. The following were used for tongue cleaning: tooth brush (81.8%), tongue cleaner (9.5%), chewing stick (2.1%) and knife (0.8%).

Majority (66.1%) consumed snacks occasionally and only 20.2% reported regular snack consumption. Meat pie (46.7%) was the most common snack consumed followed by biscuits (18.2%), cakes (11.2%), others include egg roll, chin-chin, ice cream and fruits (Fig. 1). Majority (92.6%) expressed confidence in teaching people how to brush properly and 90.5% had done that in the past, of which 35.1% had discussed with everybody they knew, i.e. parents, siblings, other relatives, friends and neighbours (Table 3).

## Discussion

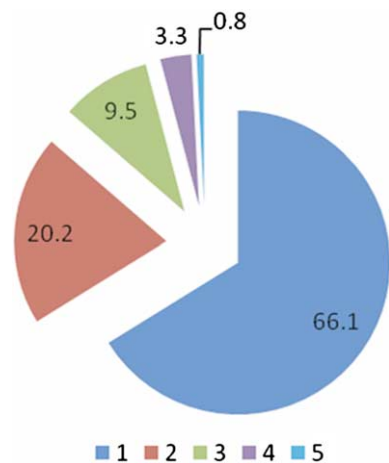
The frequency and duration of tooth brushing correlates with oral hygiene and oral health. Brushing twice daily for acceptable duration and the use of a mirror to visualise one's efforts appear to be part of an optimal oral self-care

**Table 2.** Frequency and reason for changing tooth brush

Parameter	Frequency (no.)	Percentage (%)
Frequency of changing tooth brush		
Every month	42	17.4
Every 3 months	98	40.5
Every 6 months	53	21.9
> 1 year	9	3.7
Defective tooth brush	21	8.7
Missing tooth brush	8	3.3
No specific time	6	2.5
No response	5	2.1
Reasons for changing tooth brush		
Frayed bristles	110	45.5
Softening of bristle	70	28.9
Colour faded	12	5.0
Missing tooth brush	2	0.8
Dentist's advice	1	0.4
No special reason	34	14.0
No response	13	5.4
Total	242	100.0

(22). Twice-daily brushing confers optimal effect on oral hygiene and gingival condition of both males and females (23). Twice-daily brushing is recommended by most dentists in order to improve plaque control, since most patients are not able to achieve sufficient plaque removal by performing oral hygiene measures at home (24).

In this study, majority of the students (71.9%) brushed twice daily and 52.1% brushed for 3–5 minutes. This is comparable with 68% twice or more daily brushing recorded among Turkish non-dental university students (25), lower than 81% among Mongolian dentists (26) but higher than what was recorded in many other similar studies (12, 27–30). In this study, female students



Note: 1, regularly; 2, occasionally; 3 rarely; 4, never; 5 no response

**Fig. 1.** Frequency of snacking.

**Table 3.** Interpersonal communication on tooth brushing

Who	Frequency	Percentage (%)
Parents	14	5.8
Siblings	29	12.0
Relatives	10	4.1
Neighbour	4	1.7
Friends	45	18.6
Multiple group	115	47.5
No response	25	10.3
Total	242	100.0

reported brushing their teeth more frequently than their male counterpart. This is consistent with findings of other studies (22, 25, 31). Females have been said to have better oral health knowledge (32), to exhibit greater interest in oral health and to consider sound teeth more important than males (33, 34).

The texture of a tooth brush contributes to tooth wear lesion and its sequelae. Medium texture is the recommended strength. In this study, medium texture tooth brushes were the most frequently used and the most important factor considered when purchasing a tooth brush by the students was the texture. This shows that most of the students are conforming to the standard.

It has been documented that tooth brush with frayed bristles is ineffective for proper cleaning and also causes adverse effects like gingival recession and oral ulcer, and it was recommended that tooth brushes should be replaced every 3 months or when the bristles are frayed (19, 35, 36). In this study, 40.5% replaced their tooth brush every 3 months and the usual reason for tooth brush replacement was frayed bristles in 45.5% of respondents.

Chewing stick is known to contain antimicrobial agents which are beneficial for prevention and treatment of periodontal disease (37) but when not properly used it can cause tooth wear lesions. Some tooth brush users believe that the use of chewing stick in addition to tooth brushing is the most effective way of reducing mouth debris (38). A study even concluded that the chewing stick is more effective than tooth brushing for reducing plaque and gingivitis, when preceded by professional instruction on its correct application (39). It has also been said that the use of chewing stick appears to be more effective than tooth brushing for removal of plaque from the embrasures, thus enhancing interproximal health (39). The additional tooth cleaning method used by 51.7% of respondents in this study is chewing stick. The use of dental floss was minimal and this is similar to the findings of Kirtiloglu et al. (25).

Tongue cleaning is a component of oral hygiene measure, as tongue coating is known to be the predominantly implicated cause of halitosis (40, 41). Several

volatile sulphur compound producing bacteria have the ability to colonise the dorsum of the tongue in periodontally healthy subjects (42) and they are reduced by tongue cleaning (43, 44). In this study, tongue cleaning was carried out by majority using the tooth brush and only 9.5% used the tongue cleaner.

Increased snacking frequency and inadequate tooth-brushing have been identified as predisposing factors for tooth decay (28). Regular snack consumption was practiced by 20.2%. This percentage is fewer than what was reported previously in other studies (11, 45).

The dental auxiliaries have been said to play an important role in educating their friends, family members, patients and their society on how to maintain good oral health (18–21). Respondents in this study will be able to carry out this role as 92.6% expressed confidence in teaching people how to brush their teeth and 90.5% are presently actively discussing issues on tooth brushing with parents, siblings, other relatives, friends and neighbours.

## Conclusion

The level of oral self-care behaviour of the dental therapist and dental technology students is satisfactory, but there is room for improvement of tooth brushing and dietary habits in relation to snacking. The zeal to educate others about proper tooth brushing revealed in this study suggests that these students may also be helpful in promoting oral health promotion.

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