

Tooth brushing techniques among pupils attending a Nigerian unity basic school

Adamu, V. E. ¹, Enejo, N. I. F. ¹, Eze, C. J. ²

¹Allied Health & Biological Sciences Department, Legacy University, Banjul, The Gambia.

²Dental Therapy Department, Federal College of Dental Technology & Therapy, Enugu, Nigeria.

ARTICLE INFO

Received: 18 January, 2020

Accepted: 25 May, 2020

Published: 12 June, 2020

Keywords:

Oral hygiene, Tooth brushing, Toothbrush, tooth brushing techniques, tooth brushing patterns

Peer-Review: Externally peer-reviewed

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Correspondence to:

Lead-Author: DR. V. E. Adamu
veadamu@gmail.com

To cite:

Adamu, V. E., Enejo, N. I. F., & Eze, C. J. (2020). Tooth brushing techniques among pupils attending a Nigerian unity basic school. *Orapuh Journal*, 1(1), e703.

ISSN: 2644-3740

ABSTRACT

Introduction

Adopting a proper tooth brushing technique is the second best choice, after the choice of acquiring the right toothbrush, when it comes to proper daily hygiene. With the proper tooth brushing technique, food debris and dental plaque, which has been implicated in the initiation and progression of the 2 commonest oral diseases – dental caries and periodontal disease, will be eliminated.

Purpose

This survey was undertaken to study tooth brushing techniques among pupils attending Unity Primary School, Mgbakwu, Awka-North LGA, Anambra State, Nigeria with a view to enhance the content of oral health education to this category of children in Nigeria.

Materials and methods

The tooth brushing techniques of a sample of 120 pupils attending the school, selected using the proportionate stratified sampling technique, were investigated. Data was obtained using personal interviews and tooth brushing technique observation. Participants were made up of equal number of male (50%) and female (50%) pupils. Most participants fell between the age range of 9-12 years (52.50%). Information from the survey activities was recorded in a data sheet.

Results

Results of the study indicated that no single pupil used the correct technique of tooth brushing (the roll technique) for their daily oral hygiene (0.00%). Most participants, irrespective of age or gender, adopted the horizontal technique of tooth brushing (85.83%) for their daily oral hygiene. 8.33% used the vertical technique and 5.83%, the circular technique. Further inferential analysis of data indicated that the tooth brushing techniques of the pupils attending the study school were not significantly adequate ($p>0.05$) and the choice of the technique of tooth brushing was not significantly related to gender or age ($p>0.05$).

Conclusions

This study shows that the pupils were unaware of the correct technique of tooth brushing. Oral health education, especially on tooth brushing techniques, is an urgently needed oral public health tool to help arrest the unhealthy oral health behavior, which may be catalyzing oral diseases or their precursors in the study population.

INTRODUCTION

Modern oral hygiene routine emphasizes the adoption of toothbrush and toothpaste as the primary oral hygiene materials. Dental authorities have advised that oral healthcare consumers use the right toothbrush, dubbed, 'the ideal toothbrush'. This type of toothbrush can clean the teeth effectively, leaving no injuries behind. When preparing for a good daily oral hygiene practice, the choice of adopting a proper tooth brushing technique is second only to the choice of buying and using the right (ideal) toothbrush. With the proper tooth brushing technique, food debris and dental plaque, which has been implicated in the initiation and progression of the 2 commonest oral diseases – dental caries and periodontal disease, will be eliminated (WHO, 2003, ADA, 2009, Adamu & Enejo, 2013, Mittal, 2014, Shah, 2015).

In the past, several dental health care professionals (DHCP) have developed tooth brushing techniques and recommended them as the correct method for brushing the teeth. This has led to a confusing situation, where a patient might well receive contradictory advice from three or more different DHCP (Collins, Forest & Walsh, 1999). The three commonly applied methods are the roll, vertical and horizontal methods, but the roll method is the most widely accepted because of its effectiveness. This method ensures the religious massage of gum tissues and ensures that no surface of a tooth is left untouched during tooth brushing. Empirical evidences have also shown that this technique (effectively) removes dental plaque from all tooth surfaces (Wilkins, 2016).

The pattern or technique of tooth brushing can have different effects on the oral cavity. When the proper technique is adopted, the effect would be a positive and beneficial one. On the other hand, when the wrong method is adopted, the effect would be negative and unsavoury – recession of the gingivae, abrasion of the teeth due to excessive application of force during tooth brushing, transfer of deposits from tooth to tooth and poor oral hygiene (American Dental Association (ADA), 2011). Consequently, the gravest effect of the use of wrong technique of tooth brushing is the precipitation of oral problems, including oral diseases, which the improper cleaning of certain surfaces of the teeth can breed (Adamu & Enejo, 2013)

Wrong technique of tooth brushing is one of the results of poor oral health awareness. To practice the correct technique of tooth brushing, pupils must be given the right information and taught to do so (Groove et al., 1987, ADA, 2009, Mittal et al., 2014).

MATERIALS AND METHOD

This survey was undertaken to study tooth brushing techniques among pupils attending the School with a view to enhance the content of oral health education to this category of children in Nigeria.

Research Design:

The research design adopted for this study is the cross sectional survey.

Study Area:

The research was carried out at Unity Primary School, Mgbakwu, Awka-North Local Government Area, Anambra State, Nigeria. The school is located at Achara-Umana village. The school compound shares a boundary with another community school of the same village. The school, which is a government school, has a library, football field, 9 classrooms and a canteen, where snacks are sold. The school has a population of 346 pupils with 179 males and 167 females (Source: Mrs. Ozor Njideka; Headmistress – Personal Communication on March 6, 2017).

Sample size & Sampling Technique:

A sample size of 120 pupils was selected, using the proportionate stratified random sampling technique – the researchers divided the school into six strata, based on the pupils' classes (Basic 1-6). Thereafter, the researchers selected 20 pupils (comprising 10 male and 10 female pupils) from each stratum using the simple random sampling technique.

Procedure:

The instruments used for data collection were personal interview and observation. Personal interview was used to obtain the personal data of the pupils. Observation was used to assess the technique of tooth brushing. A Full-Mouth model, a demonstration brush and a data sheet were also available for use in the data garnering process.

The full-mouth model and demonstration brush were used by the pupils to demonstrate their tooth brushing

techniques. The data sheet was used for the careful recording of the interview and observation activities.

Data Analysis:

Data collected from the survey activities were sorted into groups and analyzed using simple frequency tables and calculations of percentages. Inferential analysis of data was done using the z-test and chi-square statistical test.

RESULTS

Results of the study indicated that most of the participants were in the age range of 9-12 years (52.50%). 38.33% were between 5-8 years and the rest 9.17% were between 13-16 years (Table 1).

Table 1
Demographic Characteristics of the Pupils

Variables	Categories	Participants
		n (%)
Gender	Male	60 (50.00)
	Female	60 (50.00)
	Total	120 (100.00)
Age Range (in years)	5 - 8	46 (38.33)
	9 - 12	63 (52.50)
	13 - 16	11 (9.17)
	Total	120 (100.00)

No single pupil adopted the correct technique of tooth brushing (the roll technique) (0.00%). The horizontal tooth brushing technique was the most adopted technique among the pupils (85.83%). Other tooth brushing techniques adopted by the pupils were Circular (5.83%) and Vertical (8.33%) (Table 2).

Table 2
Tooth brushing techniques of the Pupils

Technique	Participants
	n (%)
Roll	0 (0.00)
Circular	7 (5.83)
Horizontal	103 (85.83)
Vertical	10 (8.33)
Total	120 (100.00)

$z=0.61, p=0.270$ (not significant at $P>0.05$).

For all age ranges, participants were more likely to adopt the horizontal method of tooth brushing for daily oral hygiene (35.83%, 40.83% and 9.17%, respectively) (Table 3).

Table 3
Tooth brushing pattern of the Pupils in Relation to their Age

Tooth brushing pattern	Participants n (%)	Age (in years)		
		5 - 8	9 - 12	13 - 16
		n (%)	n (%)	n (%)
Roll	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Circular	7 (5.83)	1 (0.83)	6 (5.00)	0 (0.00)
Horizontal	103 (85.83)	43 (35.83)	49 (40.83)	11 (9.17)
Vertical	10 (8.33)	3 (2.50)	7 (5.83)	0 (0.00)
Total	120 (100.00)	47 (39.16)	62 (51.66)	11 (9.17)

$\chi^2(6, N=120) = 10.06, p=0.608$ (not significant at $P>0.05$).

Irrespective of gender, most of the participants used the horizontal technique of tooth brushing. More female participants (43.33%) adopted the horizontal technique of tooth brushing than the male participants (42.50%) (Table 4).

Table 4
Tooth brushing pattern of the Pupils in Relation to their Gender

Tooth brushing pattern	Participants n (%)	Gender	
		Male	Female
		n (%)	n (%)
Roll	0 (0.00)	0 (0.00)	0 (0.00)
Circular	7 (5.83)	4 (3.33)	3 (2.50)
Horizontal	103 (85.83)	51 (42.50)	52 (43.33)
Vertical	10 (8.33)	4 (3.33)	6 (5.00)
Total	120 (100.00)	59 (49.16)	61 (50.83)

$\chi^2(3, N=120) = 0.52, p=0.771$ (not significant at $P>0.05$).

Further inferential analysis of data indicated that the tooth brushing techniques of the pupils attending the study school were not significantly adequate ($z=0.61, p=0.270$ (not significant at $P>0.05$)) and the choice of the technique of tooth brushing was not significantly related to gender ($\chi^2(3, N=120) = 0.52, p=0.771$ (not significant at $P>0.05$)) or age ($\chi^2(6, N=120) = 10.06, p=0.608$ (not significant at $P>0.05$)) (Tables 3 & 4).

DISCUSSION

No single pupil adopted the correct technique of tooth brushing (the roll technique) (0.00%). The horizontal tooth brushing technique was the most adopted technique of tooth brushing among the pupils (85.83%). Other tooth brushing techniques adopted by the pupils are Circular (5.83%) and Vertical (8.33%). The study also indicated that for all age ranges, participants were more likely to adopt the horizontal method of tooth brushing for daily oral hygiene (35.83%, 40.83% and 9.17%, respectively). Similarly, irrespective of gender, most of the participants

used the horizontal technique of tooth brushing. This is saddening as it is a predictor of potential future oral cataclysmic events.

In a similar study conducted by Mohammed & Gheena (2015), 34.80% of their study participants brushed their teeth in random direction, 27.20%, horizontal and 18% used the vertical strokes. In the study of Vishwanathia (2016) 50% of the participants (children) brushed their teeth with horizontal and vertical strokes. Wesley (2015) noted that 93.89% of participants (school children) in their study brushed with the horizontal strokes. These studies also demonstrated that majority of the pupils in their study populations adopted the wrong technique of tooth brushing. This may be due to lack of knowledge on the appropriate technique of tooth brushing.

The tooth brushing techniques of the pupils attending the study school were not significantly adequate ($p>0.05$) and the choice of the technique of tooth brushing was not significantly related to gender or age ($p>0.05$). The continuous use of the random, circular, vertical or horizontal techniques of tooth brushing can lead to gum recession, abrasion and other dental diseases and the subtle accumulation of deposits as posited by the study of Aderinokun (2000). Mir et al. (2018) found that most participants (children) in their study (34.80%) brushed their teeth horizontally while 18% used the random brushing technique of tooth brushing. He also attributed this anomaly in daily oral hygiene method to a lack of knowledge about the discipline.

CONCLUSIONS

This study indicated that pupils in this study lack adequate knowledge about the ideal technique of tooth brushing, which should be a vital component of daily oral hygiene. Oral health education, especially on tooth brushing techniques is an urgently needed oral public health tool to help arrest the unhealthy oral health behaviour of brushing the wrong way, which may be catalyzing oral diseases or their precursors in the study population.

Acknowledgment: The authors wish to acknowledge the authorities of Unity Primary School Mgbakwu, Awka-North LGA, Anambra State for permissions and co-operation that ensured the success of this work.

Ethics Approval: Ethical approval for this work was obtained from the CHS, FCDTT, Enugu, Nigeria.

Conflict of Interest: None declared.

OrCID iDs: Nil identified.

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