

Full Length Research Paper

Factors' affecting mother's brushing technique of less than five years age children in Pakistan

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Proper tooth brushing technique may help to protect the accumulation of plaque and reduce the prevalence of dental caries and gingivitis in children. The mothers play an important role in uptake of encouraging dental health practices. A cross sectional study was conducted among mothers in Karachi, Pakistan from October to December, 2014. A total of 281 mothers were selected by using consecutive sampling technique. Data were collected by using a semi structured pretested questionnaire. Socio-demographic and behavioral factors related to brushing technique were identified by applying logistic regression model. Majority of these mothers (82%) were having improper brushing technique. After adjusting socio-demographic variables, the odds of having improper brushing technique among illiterate mothers were five times (AOR = 5.34, CI = 2.03 to 14.4) more as compared to literate mothers. The other factors that showed significant association in multivariate analysis were mothers who had house hold income <10,000 Pakistan rupees and mothers who had negative attitude regarding dental caries and oral hygiene. This study concluded that majority of these mothers were not aware about the proper technique of brushing teeth and factors affecting brushing techniques were identified as socioeconomic status and low level of education found significantly associated with behavioral practices.

Key words: Brushing technique, mothers, less than 5 years children, Pakistan.

INTRODUCTION

Proper tooth-brushing programs may help to improve certain oral diseases, such as chronic gingivitis and caries which are considered as major public health problems (Koerber et al., 2005). Mother's positive attitude helps in behavior modification and plays an essential role in encouraging the proper dental health practices. Studies suggest that an increase in severity of dental caries is because of the unawareness and ignorance of

mothers who did not instruct their children for healthy lifestyle from birth (Huebner and Riedy, 2010). Moreover, tooth brushing habits learnt in the early years of life are deeply ingrained in child's mind and leads to the implementation of good oral hygiene methods in later life (Khadri et al., 2010).

Streptococcus mutants and plaque levels were significantly lower among children who had initiated tooth

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brushing by age 12 months, and had mothers that brushed their own teeth regularly (Mohebbi et al., 2008; Habibian et al., 2002). Mothers should have focused on the significance of the removal of bio-film that covers the dental surface with the support of the proper tool for the oral health maintenance. It is accomplished by mechanical way, which includes fluoride containing toothpaste, dental flossing and tongue scraping. Other actions for maintaining proper oral hygiene, for example, Xylitol chewing gums, antibacterial agents, for instance chlorhexidine and iodine were also used for effective management of dental caries (Young et al., 2010).

Researchers found that more than 40% of mothers were not aware of the proper tooth brushing technique, such as brushing for 2 min, the need for a parental supporter for children up to the age of eight to ten years and using a pea-size amount of fluoride toothpaste. Besides that regularity of brushing teeth is also important at least twice a day or more, ideally after meals in the morning and before going to bed (Adams et al., 2009; Zero et al., 2012). Furthermore, co-operation of children during tooth brushing were found to be a major factor for how often children and parents brush their teeth (Suzuki, 1990; Tiberia et al., 2007). Studies showed that tooth brushing is one of the consistent element of obliging messages given to children, adolescents and adults in programs to promote oral health. The other factors like socioeconomic, demographic and behavioral were found related to the practice (Beikler and Flemmig, 2011; Villalobos-Rodelo et al., 2006) and tooth brushing fluctuations across these factors were identified.

Parents, especially mothers, were found prevailing figures in determining children's behavior who decide the type of toothbrush, the amount of toothpaste used and the pattern of brushing their children's teeth. Furthermore, the earlier the control, the more likely it will determine the attitude and behavior of their children, which may be hard to change afterwards in life.

Proper brushing technique among mothers is very important for the prevention of early childhood caries and gum diseases like gingivitis in children, but there is lack of research in this important aspect in Pakistan. This study is distinctive to determine the brushing technique among mothers and it is also helpful for the initiation of an oral health awareness program to improve the perception and behavior of good oral hygiene.

The objective of this study was to determine the factors affecting the brushing technique among mothers of less than 5 years age children in Karachi, Pakistan.

METHODOLOGY

Study area, design and period

A cross sectional study was conducted among mothers attending a tertiary care hospital in Karachi, Pakistan from October to December, 2014.

Sample size and sampling technique

A sample size of 281 mothers was calculated by using the proportion of mother's knowledge regarding oral hygiene (24%) with 95% confidence interval and a 5% margin of error. The data was collected by using consecutive sampling technique.

Instrument and data collection

Mothers above 18 years of age, having a child less than 5 years were included in the study and were interviewed using a semi structured pretested questionnaire. The questionnaire was based on socio-demographic characteristics of mothers, and behavior and perceptions regarding brushing technique. Data were collected after taking written consent from the mothers and they were informed about the purpose and benefits of the study.

Scoring

A scale was used in measuring behavior and perceptions which was based on nine items containing statements about brushing technique. For each correct answer, a score of 1 point was given, while a score of 0 (zero) point was for incorrect answer. A cut off point for improper brushing technique was 1 to 4 score and a score of 5 points or more were given for proper brushing technique.

Data management and analysis

Data was entered and analyzed using the software Statistical Package for Social Science (SPSS) version 16. Descriptive statistics were used to describe socio-demographic characteristics. For inferential statistics, scoring was performed for proper/improper brushing techniques. The association between the converted scores and other independent variables were determined through logistic regression analysis. Adjusted odds ratio and their 95% confidence intervals were calculated. The independent variables having p-value ≤ 0.25 were included in the multivariate analysis. The P-value of < 0.05 has been considered significant.

Ethical consideration

The ethical approval was obtained from the Institutional Review Board, Dow University of Health Sciences, Karachi. A written consent was obtained from the study participants.

RESULTS

Descriptive statistics

The mean age of mothers was 29 ± 4.1 years. Majority (90%) of the participants were married. About 51% mothers had more than two children. Regarding educational status, 57% of mothers were illiterate. About 20% women were working on daily wages, while 68.7% were earning less than 10,000 Pakistani rupees. Majority (86.3%) of mothers were Muslims by religion.

Mean score of behavior regarding brushing technique among mothers were 1.18 (SD ± 0.38). Majority of the mothers had improper brushing technique (82%) towards the maintenance of oral hygiene.

For, mother's assessment regarding brushing technique, only 6.8% mothers knew about the time spend on brushing and half of the mothers (59.4) responded that brushing is necessary after breakfast and before going to sleep. Only 22.1% mothers were aware about the correct methods of brushing and 14.2% had reported that replacement of the toothbrush is essential after 3 months. Unfortunately only few mothers (5.3%) knew about the need for parental assistance for children during tooth brushing at the age of 10 years. Regarding use of fluoridated toothpaste, 37.7% mothers affirmed that they were using it and only 13.9% were aware about that fluoride helps to strengthen the teeth. For mother's perception regarding the frequency of brushing, only 18.5% were aware that two times a day brushing is necessary while 69.8% were using tooth brush with paste (Table 1).

The univariate analysis showed that odds of having improper brushing technique among illiterate mothers were five times (OR=5.36, CI=2.67-8.11, p value<0.001) more as compared to literate mothers. The odds of having improper brushing technique among mothers who had household income <10,000 Pakistani rupees were 4 times (OR=4.52, CI=1.82-11.1, p value 0.001) more as compared to mothers having household income >10,000 Pakistani rupees. The odds of having improper brushing technique among mothers who were divorced were 2 times (OR=2.43, CI= 1.67-3.56, p value 0.02) more as compared to married women. The odds of having improper brushing technique among mothers who had negative attitude regarding dental caries and oral hygiene related statements were 2 times (OR=2.12, CI=0.89-4.62, p value <0.001) more as compared to mothers who had positive attitudes.

Multivariate analysis

After adjusting socio-demographic variables, the odds of having improper brushing technique among illiterate mothers were five times (AOR=5.34, CI=2.03-14.4) more as compared to literate mothers. The odds of having improper brushing technique among mothers who had house hold income <10,000 Pakistan rupees were four times (AOR=4.62, CI=1.87-11.1). The odds of having improper brushing technique among mothers who had negative attitude regarding dental caries and oral hygiene related statements were 2 times (AOR=2.14, CI=0.93-4.70) more as compared to mothers who had positive attitudes (Table 2).

DISCUSSION

In this study, only 18.1% of Pakistani mothers were practicing correct brushing technique. Factors affecting the brushing technique among mothers less than 5 years

of age children were socioeconomic status, low level of education and behavioral practices.

In this study, only 18.1% mothers responded that brushing is necessary twice a day, in contrast to study conducted at Manchester (UK) reporting that 71% mothers brushing their children's teeth twice a day and only 40% mothers were found brushing their children's teeth inadequately (Blinkhorn et al., 2001).

Another study conducted at Michigan reported that frequency of tooth brushing was a significant predictor in promoting good oral health of children by mothers (Akpabio et al., 2008). It is dreadfully essential to teach a child proper health habits as early as possible, whereas in our study, majority of the mothers (65.5%), responded that they taught regularly their children, but unfortunately their knowledge regarding oral health was not adequate to practice correct brushing technique.

A study conducted at Bialystok, Poland showed that children usually spend time on brushing too diminutive and focused mostly on the front teeth (Joanna and Ewa, 2012). In this study, unfortunately majority of mothers were not aware about spending time on brushing.

In this study, majority of the mothers did not know about the brushing method. A similar study conducted at lasi, Romania showed that 50% of mothers were lacking in skills of cleaning children's teeth (Marinela et al., 2008). It is very important that mothers should have adequate information and motivation to maintain good oral health for preventing dental caries and other gum diseases of their children.

Study conducted at Thailand showed that brushing technique should be brushing frequency of teeth at least twice a day or more, ideally after meals in the morning and before going to bed. When the first teeth erupt, there should be supervised brushing from adults up to the age of eight years (Zero et al., 2012). In the present study, 59.4% mothers agreed that brushing is necessary after breakfast and before going to sleep and only few mothers (5.3%) responded that child's tooth brushing should be under the supervision of mothers/care givers at the age of eight to ten years.

In the present study, only 15.3% mothers were aware about the dental floss. A study conducted at Norway showed that mothers who flossed regularly were more likely to have children who regularly flossed their teeth (Rossow, 1992). Flossing is very important for removing inter-proximal debris; one study found that only 13% of 622 adult flossed daily and 52% admitted that they never floss (Segelnick, 2004).

In our study, 37.1% mothers responded that they use toothpaste containing fluoride. Similar study conducted at Bangalore, India reported that parents did not know whether the tooth paste contain fluoride or not and what should be the appropriate concentration of fluoride necessary for pre-school children (Vinay et al., 2011). Another study showed that mother's knowledge about fluoride was not enough (Suresh et al., 2010). In this

Table 1. Assessment regarding brushing technique among mothers (n=281).

Variable	Mother's response (%)
Frequency of brushing (Correct response)	18.5
Time spend on brushing (Correct response)	6.8
Brushing after breakfast and before sleep (Correct response)	59.4
Brushing method (Correct response)	22.1
Replacement of toothbrush (Correct response)	14.2
Supervise Child's tooth brushing (age) (Correct response)	5.3
Mothers taught regarding tooth brushing (Correct response)	65.5
Use of fluoridated tooth paste (Correct response)	37.1
Use of dental floss (Correct response)	15.3
Tool for brushing (Correct response)	69.8
Fluoride function (Correct response)	13.9

Table 2. Association of behavior level regarding tooth brushing technique and the independent variable included in the study (Adjusted).

Variable	Improper brushing technique	AOR* (95% CI)	p-value
Mother's age (Years)			
18-29	123	0.64 (0.27-1.54)	0.36
30-39	107	1	
Marital status			
Married	204	1.39 (0.28-1.38)	0.10
Divorced	26	1	
No of children			
≥2	117	0.49 (0.21-1.18)	0.14
≤2	113	1	
Education			
Illiterate**	159	5.34(2.03-14.4)	<0.001
Literate	71	1	
Occupation			
Working mothers	37	0.90 (0.36-2.24)	0.84
Non working mothers	193	1	
House hold income			
≤10000PKR*	183	4.62 (1.87-11.1)	0.001
≥10000PKR	47	1	
Religion			
Muslim	202	0.86 (0.12-1.54)	0.90
Non Muslim•	28	1	
Attitude			
Negative attitude	6	2.14 (0.93-4.70)	<0.001
Positive attitude	51	1	

*PKR: Pakistani rupee; **Illiterate (cannot read and write) •Non muslim (Christians and Hindus). P value was calculated by logistic regression and significant at the ≤0.05 level. AOR*: Adjusted odd ratio.

study only few 13.9% mothers were aware about the function of fluoride and considered it preventive for dental caries.

In this study, mothers' negative attitude regarding dental caries and its prevention were found strongly associated with improper brushing technique (p value <0.001). A survey conducted in London reported that poor attitude of parents towards oral health of infants and young children were found to be associated with increased caries prevalence (Hinds and Gregory, 1995).

A study conducted at Mexico showed that people of lower socioeconomic status have fewer resources to meet oral health challenges: less free time, less money to buy toothpaste and toothbrushes (Vallejos-Sánchez et al., 2006). In our study, mothers who had income less than 10,000 Pakistani rupees were found to be associated with improper brushing technique.

In the present study, mother's low level of education was found to be associated with the improper brushing technique. The study conducted at England, reported that parents coming from the deprived areas and with lower educational levels have a low level of oral health knowledge. Mothers with higher education have a better knowledge regarding the oral hygiene practices and the importance of deciduous teeth. It has been suggested that the parents in general, improved level of education is considered to be an appropriate source of information and getting aware about oral health (William et al., 2002).

Conclusion

This study concluded that majority of the mothers were not aware about the proper brushing technique. The factors identified were socioeconomic status and low level of education found significantly associated with behavioral practices.

RECOMMENDATION

Mothers played an imperative role in children's healthy habits from birth to. This study suggested to design oral health awareness programs for mothers so that suitable, appropriate and feasible model for health promotion of dental health. The most important recommendation is uplifting of socioeconomic status of mothers. In future, analytical and community based studies are recommended.

Competing interests

The authors declare that they have no competing interest.

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