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RESEARCH ARTICLE

THE EFFECTUALITY OF PARENTAL BEHAVIOUR ON ORAL HYGIENE STATUS OF PRE-SCHOOL CHILDREN OF BHOPAL CITY, INDIA

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ABSTRACT

Background: Factors related to parental knowledge, attitudes, and behaviour have been associated with parental abilities to promote adequate dental health behaviour in their children.
Aim: To investigate the influence of behaviour of parents on their child's oral hygiene among preschool children of Bhopal, India.
Settings and Design: Cross sectional study conducted among the Pre-school children and their parents of Bhopal City, India.
Materials and Medhods: The modified WHO oral health assessment proforma (1997) was used for this purpose. General information related to age, sex, educational level, occupation and monthly income along with the behaviour of the parents towards their child's oral health were collected using a pretested, self reported, close ended questionnaire. Statistical analysis was done using SPSS Version 20. Descriptive statistics, chi-square, t-test and spearman's correlation were applied wherever indicated.
Results and Conclusion: The study subjects comprised of a total of 1383 preschool children, out of which 759 (54.88%) were males and 624 (45.12%) were females. The prevalence of plaque induced gingivitis among male study subjects was 3.69% and females were 3.21%. It was found that parental behaviours had a correlation with gingivitis and were found to be statistically significant ($p<0.05$). Hence it can be concluded that, the behaviour of the parents towards their child's oral health may have a strong impact on the oral hygiene of preschool children. The maintenance of child's dental health behaviour is of precedence as dental health is a marker of overall health.

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INTRODUCTION

Oral health affects children and adults both physically and psychologically influencing how they grow, enjoy life, look, speak, chew, taste food, and socialize. (Pyatt *et al*., 2011) Children are dependent upon their parents and caregivers to learn and maintain healthy habits; hence being role models and promoting early healthy habits for children is a valuable part of developing quality, nurturing relationships between the parents or caregivers and children. (Characteristics of the Healthy Preschool child, 2014) The mouth is a gateway to the whole body, and the health of the mouth is a reflection of total body health. (Pyatt *et al*., 2011) Factors related to parental norms, knowledge, attitudes, and behaviour have been associated with parental abilities, especially the mother's and father's ability to promote adequate dental health behaviour in their children. (Siqueira *et al*., 2013; Dhar *et al*., 2007) Good Oral hygiene practices are necessary from a young age to ensure positive long term dental health and hygiene and positively influencing the behaviours of children towards sustainable good oral health requires an integrated health promotion and health education approach especially imbibed through the family. (Arora *et al*., 2011; Mitrakul *et al*., 2012) The influence of parental precedence and behaviours regarding dental health care and its role on their child's oral hygiene has been poorly explored. Hence, this study was designed to investigate the dental health behaviours of parents regarding their child's oral health and its influence on the oral hygiene of the children in Bhopal City, Madhya Pradesh, India.

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MATERIALS AND METHODS

A cross sectional study was conducted among the Pre-school children and their parents in Bhopal City, Madhya Pradesh,

India. Defined target population consisted of Pre-school children of Bhopal city aged between 3-5 years. Preschoolers were examined for oral health status and their parents were interviewed using a questionnaire. The present study employed multistage stratified cluster sampling methodology among the preschoolers (3-5 years) attending private schools of Bhopal city. Preschoolers attending private schools in Bhopal city, Children with a full set of deciduous teeth and either of the parents or guardian were included in this study. Children with the presence of 1st permanent molars, absentees at the time of the survey, the parents not willing to participate, parents who returned incompletely filled questionnaires, parents who did not return the filled questionnaire within the specified time period or even after reminders, parents who were unable to respond to survey instrument because of insufficient ability of reading skill or physical or intellectual disabilities and preschoolers with physical or intellectual disabilities or limited language skills such that they are unable to participate were all excluded. The detailed study protocol was submitted and approval from the ethical committee of People's Dental Academy, Bhopal was obtained. Permissions for conducting this study were taken from Director of School Education, School Authorities and parents and teachers of the children. To ensure uniform interpretation, understanding and application by the examiner regarding the codes and criteria for the various diseases and conditions to be observed and recorded in the Modified WHO proforma (2007) used, the examiner underwent prior calibration and training in the Department of Public Health Dentistry, People's Dental Academy, Bhopal, before the commencement of the study. General information related to age, sex, educational level, occupation and monthly income along with the oral hygiene behaviour of the parents towards their child's oral health were collected using a pretested, self reported, close ended questionnaire. Statistical analysis was done using SPSS Version 20. Descriptive statistics, chi-square, t-test and spearman's correlation were applied wherever indicated.

RESULTS

The present study was conducted among the Preschool children of Bhopal City between the ages of 3-5 years. A gingivitis (plaque induced) prevalence of 3.47% (n=48) was observed among the study subjects. The prevalence among male children was 3.69% (n=28) and females were 3.21% (n=20). The difference in observation was found to be statistically insignificant. (Table 1) In the maxillary arch, in the anterior sextant, 96.3% (n=731) and 96.8% (n=604) gums were found to be healthy among the male and female study subjects respectively. Deposits of calculus were found among 3.4% (n=26) males and 2.4% (n=15) females. In the maxillary posterior sextant, healthy gums were observed among 97.5% (n=740) males and 98.6% (n=615) females. Gingivitis characterised by bleeding gums was seen only among 0.1% of the male children and calculus deposits was observed among 2.4% (n=18) males and 1.4% (n=9) females. There was no statistical significance observed in the maxillary anterior and posterior sextant. In the anterior sextant of the mandibular arch, healthy gums were observed among 96.3% (n=731) male subjects and 97% (n=605) female subjects. 0.4% (n=3) and 3.3% (n=25) males and 0.6% (n=4) and 2.4% (n=15) females exhibited gingivitis characterised by bleeding gums and calculus deposits respectively. In the posterior sextant of the mandibular arch, healthy gums were found among 97.4% (n=739) males and 98.6% (n=615) females with bleeding gums and calculus deposits observed among 0.1% (n=1) and 2.5% (n=19) males and 0.2% (n=1) and 1.3% (n=8) females respectively. There was no statistically significant difference observed among the both the genders. (Table 2) When the parental behaviour was analyzed, it was observed that 574 (61.6%) strongly agreed that they help their child in brushing their teeth and 297 (31.9%) also strongly agreed that they have difficulty in making their child brush teeth twice daily. The parents attitude that they find it difficult to make their child brush their teeth twice daily was found to be highly statistically

Table I: Prevalence of Gingivitis among the Preschoolers

Gender	Total (N)	Total no of subjects with Gingivitis n(%)	Statistical Inference
Male	759	28 (3.69%)	X^2=0.239 df=1 P value=0.625 (NS)
Female	624	20 (3.21%)	
Total	1383	48 (3.47%)	

Table II: Prevalence of Healthy gums, Bleeding gums and Calculus among Preschoolers

Arches		Gender	Normal N (%)	Bleeding N (%)	Calculus N (%)	Total (N)	Statistical Inference	P Value
Maxillary Arch	Anterior Sextant	Male	731 (96.3)	2 (0.3)	26 (3.4)	759	X^2=8.421 df=4	P=0.077 (NS)
		Female	604 (96.8)	5 (0.8)	15 (2.4)	624	X^2=.948 df=4	P=0.918 (NS)
	Posterior Sextant	Male	740 (97.5)	1 (0.1)	18 (2.4)	759	X^2=4.651 df=4	P=0.325 (NS)
		Female	615 (98.6)	-	9 (1.4)	624	X^2=1.437 df=2	P=0.487 (NS)

Table II: Prevalence of Healthy gums, Bleeding gums and Calculus among Preschoolers (*Contd*)

Arches		Gender	Normal N (%)	Bleeding N (%)	Calculus N (%)	Total	Statistical Inference	P Value
Mandibular Arch	Anterior Sextant	Male	731 (96.3)	3 (0.4)	25 (3.3)	759	X^2=7.780 df=4	P=0.100 (NS)
		Female	605 (97)	4 (0.6)	15 (2.4)	624	X^2=2.507 df=4	P=0.643 (NS)
	Posterior Sextant	Male	739 (97.4)	1 (0.1)	19 (2.5)	759	X^2=4.504 df=4	P=0.342 (NS)
		Female	615 (98.6)	1 (0.2)	8 (1.3)	624	X^2=4.353 df=4	P=0.360 (NS)

Table III: Frequency Distribution of Parental Behaviour towards their Child's Oral Hygiene

Parental Behaviour	No response n(%)	Strongly Disagree n(%)	Mildly Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	Total (N)	Statistical Inference
Parental Behaviour	18(1.9)	8(0.9)	33(3.5)	10(1.1)	289(31.0)	574(61.6)	932	X^2=18.712 df=15 P=0.227 (NS)
Help child in brushing teeth								
Difficulty in making child brush teeth twice daily	41(4.4)	40(4.3)	227(24.4)	79(8.5)	248(26.6)	297(31.9)	932	X^2=37.893 df=15 P=0.001 (HS)

Table IV: Correlation between Parental Behaviour and Gingivitis

Parental Attitude/Behaviour	Gingivitis Status n (%)	Spearman's Correlation (rho)	Significance
Parental Behaviour			
Help child in brushing teeth		0.001	P=0.985 (NS)
Difficulty in making child brush teeth twice daily	43(4.6)	0.079	P=0.016 (S)

significant (p=0.001) but the parents behaviour regarding helping their child in brushing their teeth was not found to be statistically significant. (Table 3) On analysing the parental behaviours, a strong positive correlation was observed between helping the child in brushing teeth with gingivitis (rho=0.001). A positive correlation was also observed between gingivitis and parental behaviour regarding difficulty in making the child brush teeth twice daily (rho=0.079). This was found to be statistically significant (p=0.016). (Table 4)

DISCUSSION

Children's dental health is critically important to their overall health and their successful development into high-functioning adults. Diseases such as tooth decay and gum diseases are debilitating in themselves and can lead to other problems such as constant pain, malnourishment, loss of teeth, and in adulthood, increased risk of cardiac problems and diabetes. Pain itself may overshadow childhood, making it difficult to learn, attend school, and develop socially. (Fox, 2013) Gum disease (gingivitis or gum bleeding) is a common infection among most children and adolescents. Gingivitis causes gum tissue to swell, turn red, and bleed easily. If left untreated, it can eventually advance to more serious forms of gum disease. (Pyatt et al., 2011) In the present study it was observed that a total plaque induced gingivitis prevalence of 3.47% was observed among the study subjects. The prevalence among males was 3.69% and females were 3.21%. These observations were in conflict with the study conducted by Feldens *et al*. (2006) among 3 to 5 year old nursery school children in Canaos, South Brazil, where it was observed that 99% of the children had visible plaque and 77% had gingivitis and this was more prominent among boys. This can be due to the low socio economic status of the population which can contribute to poor living conditions, dietary habits and self care motivation. As the present study was conducted in urban Bhopal population, these factors are altered and improved. The study conducted by Dhar *et al*. (2007) and Frencken (1986) among the school children reported a high gingivitis prevalence in the rural population and comparatively lesser prevalence in the urban population. This was in agreement with the present study where the study group comprised urban population and the prevalence of gingivitis among them was found to be comparatively low (3.47%). This can be attributed to the living conditions of the urban population and the increased awareness regarding oral health among this group. Hugoson *et al*. (1981) and McClellan *et al*. (1996) in their study among the school children, observed moderate to high gingival inflammation but only a small number of these children showed profound symptom of disease. This was not in agreement with the present study, where it was observed that the maxillary anterior sextant had an increased prevalence of bleeding gums (0.3-0.8%) and calculus deposits (2.4-3.4%) when compared to the posterior sextant and in the mandibualr arch the calculus deposits were more in the anterior sextant (2.4-3.3%). This can be attributed to the inaccessibility of these areas for cleaning and due to the dietary patterns followed by the study subjects. Matsson (1978) observed that the growth of gingival inflammation is comparatively low and slow among children. This is in accordance with the present study, where low prevalence of gingivitis was observed among the preschool children. In this study, on analysing the parental behaviours, a strong positive correlation was observed between helping the child in brushing teeth and parental behaviour of finding it difficult to make child brush teeth twice daily with gingivitis and this was in accordance with the study conducted by Okada *et al*. (2002) who suggested that Parents' oral health behaviour could influence their children's gingival health directly and/or indirectly through its effect on children's oral health behaviour. This can be due to the assistance provided by parents to their children in maintaining oral health which can improve their oral hygiene. Talekar *et al*. (2005) opined that parental behaviour regarding oral health has an intense impact on their child's oral health especially dental caries and gingivitis which was similar to the present study where a strong correlation was observed between parental behaviour with child's oral hygiene. Mitrakul *et al*. (2012) and Kumar *et al*. (2013) in their study investigated parental attitudes and behaviour affecting their ability to care for their children's oral health and opined that the factors that affected their ability to care for their child's oral health were lack of time and lack of knowledge This was in accordance with the present study where a positive correlation was observed the behaviour and gingivitis. Parental behaviour in regard to their child's oral health can be associated with their education levels and monthly income. Bozorgmehr *et al*. (2013) in their study suggested that some important health behaviours in parents, such as tooth brushing habits and their assistance to their children in practicing these habits are important determinants of these behaviours in their young children. This is in coherence with the current study. This can be attributed to the fact that parental behaviours related to good oral hygiene practices can have a positive impact on the oral health maintenance of the children which in turn can help prevent gingivitis Limitations of this study can be attributed to the sampling procedure employed. The cluster sampling design

can result in sampling errors that may influence the effective size of the outcome variables when compared to random sampling. A full valid response to the questionnaire by the parents may have its limitations. The preschool children chosen as the study population were too young to be entirely co-operative, hence some difficulty was felt while recording their oral hygiene status.

Conclusion

A positive correlation was also observed between gingivitis and parental behaviour of finding it difficult to make child brush teeth twice daily. Most of the parents did not assist their child in brushing teeth which may have resulted in increased prevalence of gingivitis. The oral hygiene of preschool children is a public health concern and education regarding oral hygiene practices and dietary habits should be imparted to this population. Regular oro-dental check up should be made a priority for this group.

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