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Original Research Article

Behavioural patterns of children as risk factors of oral hygiene and dental caries- A short study

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ABSTRACT

Background: Oral health is an important aspect affecting general health and quality of life. All children have different health considerations including oral health. Children have their own basic nature and this behaviour variability may influence their understanding and acceptability towards maintenance of oral hygiene. Some children may not follow the proper oral hygiene regimes due to variable behaviour which can drastically affect their oral status. Thus, the behaviour of child can act as an obstacle in maintaining oral hygiene.

Aim: The present study was aimed at finding the association of child behaviour with dental caries and oral hygiene status.

Materials and Methods: A convenient sample of 100 children aged 6-11 years visiting the Department of Pediatric and Preventive Dentistry were taken for the study. A questionnaire was designed to assess the behaviour of children. Oral hygiene Index and Caries Index of the samples to be studied were recorded. The obtained data was tabulated and subjected to statistical analysis

Result: A statistically significant association was found between child behaviour and dental caries(deft). Also, different types of behaviour pattern showed difference in oral hygiene and caries index. a correlation between oral hygiene and child behaviour was also found.

Conclusion: Oral health status has a multifactorial etiology with child behaviour as an influential factor. Especially in young children, it may directly or indirectly influence caries risk and oral hygiene status. If identified in initial phase, working upon it may help in promoting better oral health of children in the long run.

1. Introduction

Oral health is an important aspect affecting general health and quality of life. As dental caries is among the most prevalent diseases worldwide, one is always at risk of it. In addition to prevention strategies at each life stage, determining the modifiable factors that influence the oral health status at an early age is important for maintaining good oral health throughout life.[1]

Toothbrushing less than twice daily and sugar snacking between meals have been identified as key behavioral factors explaining the presence of dental caries in children.[2,3] Children are more likely to be caries free if their teeth are brushed from an early age, twice daily with fluoride toothpaste in an environment in which the frequency of sugar intake is controlled.[4–6]

Unhealthy lifestyles, such as sleep deprivation, unbalanced food preferences and longer screen time, have already been reported in literature.[7,8]

An individual caries risk assessment is important in order to target prevention resources for children who need

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it the most. Aspects of a child's behavioural type may be important parameters to be considered in caries risk assessment as well as for planning dental treatment.[9]

Behaviour of an individual can be defined as a mix of responses to external and internal stimuli. It is the way in which a person reacts in different situations and the way someone expresses different emotions like anger, happiness, love, etc.[10]

Child behaviour may pose a challenge in the maintenance of oral hygiene. Behaviors adopted by children can make a negative or positive contribution to health. Children have their own basic nature and this behaviour variability may influence their understanding and acceptability towards maintenance of oral hygiene. Some children may not follow the proper oral hygiene regimes due to different behaviour which can drastically affect their oral status. Thus, the behaviour of child can act as an obstacle in maintaining oral hygiene.

Dental caries has a multifactorial etiology, which has been studied in depth and it is recognized that social and behavioral factors play a significant role in caries development.[11]

The association between dental caries, parenting style, child's dental behavior, oral hygiene, diet, socio-economic status have been studied in detail. However, the impact of child behaviour with their oral hygiene status as risk factor remains unexplored. The authors, therefore, planned this study to evaluate the association between child's behaviour to oral hygiene and dental caries.

2. Materials and Methods

This was a cross-sectional study to assess child behaviour and its correlation with dental caries and oral hygiene status of school going children in educational setup of Department of Pediatric Dentistry, Institute of Dental Studies and Technologies, Modinagar.

The study design and protocol was analyzed and approved by the Institutional Ethics Committee. Participants were recruited from different socioeconomic areas and their collection was established on simple random sampling.

A convenient sample composed of 100 children of both genders aged 6-11 years accompanied with parents visiting the department of pediatric dentistry formed the study subjects. Subjects qualified for participation in the study were to be systemically healthy and mentally sound.

The study population comprised of only those children where the parents experienced the child was not totally obedient in his/her behavioural conduct.

2.1. Child's behaviour assessment

At the age of 6-11 years, the child is growing and has an individual personality. During this period children possess some common behaviour types such as lying, ignoring to follow one's command, spending long screen time, may be pricky in eating, might throw things or mock showing disrespectful behaviour, can have a bad habit of whinning to get what she/he wants or can show temper tantrums.

Keeping this view in mind, a questionnaire was self formulated to assess the normal day to day child behaviour type and identify child behaviour into seven types- Misleading, Defiant, Spoiled, Arrogant, Whining, Hysterical and Stubborn.

The questionnaire included the following questions regarding child behaviour.

Table 1: Self designed questionnaire to assessbehaviour type

S.No	Question asked	Yes/No
1	Does your child truly tells you things when you ask them	
2	Does your child ignore you when you tell them some small work	
3	Does your child claim to be hungry every 10 minutes, or sneaks food during times when it is not allowed	
4	Does your child call names and mocking you	
5	Does your child complain about something in an annoying, crying voice but listen to what you say/do	
6	Does your child get agitated and resorts to screaming, kicking etc	
7	Does your child stick to his/her wishes and not follow your commands	

Purpose of the study was explained to the parents and questionnaires regarding child behaviour at home were distributed to the parents and were asked to fill the same.

The parent's responses were recorded and scores of the same was calculated.

2.2. Clinical examination

Clinical examinations were carried out with a dental mirror and an explorer by the same trained and calibrated examiner for the all subjects. Dental plaque was assessed using the Simplified Oral Hygiene Index (OHI-S) The presence of decayed, missing or filled teeth was assessed using WHO criteria. Both primary and permanent teeth were evaluated.

Brushing habits consisting of frequency and type of motion used were also recorded.

The obtained data was tabulated and subjected to statistical analysis. The data were tabulated and analysed by using SPSS Statistics Software version 21. Associations between child behaviour and recorded parameters was determined. The value of p was set at $p<0.05$.

3. Results

The study was carried out on a total of 100 children eligible for inclusion and consisted of 100 participants of both the genders aged 6-11 years. The mean age of the study population was 8.28+2.63 years.(Table 2)

Table 2: Gender distribution

Gender	N	%
Males	35	35.0
Females	65	65.0
Total	100	100.0

The behaviour types most commonly seen in the studied sample were spoil and whinning children. Also, majority of the studied children were lying and stubborn.(Table 3)

Table 3: Behaviour pattern

Behaviour type	N	%
Lying	18	18.0
Defiant	5	5.0
Food related problems (spoiled)	27	27.0
Disrespectful (arrogant)	1	1.0
Whining	27	27.0
Temper tantrums (hysterical)	8	8.0
Stubborn	14	14.0

A statistically significant correlation was seen between child behaviour type and dental caries (deft). Children with arrogant behaviour had the highest dental caries however had fair oral hygiene. Dental caries was also high for children with temper tantrums (hysterical). Poor oral hygiene was seen in most of the children who were spoiled followed by whining and defiant child. (Table 4).

Table 4: Comparison of mean OHI-S, Mean DMFT and deft with behaviour type

Behaviour type	OHI-S	DMFT	Deft
Lying (misleading)	0.44 + 0.24	0.06 + 0.24	1.61 + 1.6
Defiant	0.49 + 0.34	0.40 + 0.54	2.20 + 2.8
Food related problems (spoiled)	0.59 + 0.36	0.37 + 0.68	1.59 + 1.86
Disrespectful (arrogant)	0.16 + 0.0	0	6.0 + 0.0
Whining	0.51 + 0.28	0.19 + 0.48	1.89 + 1.5
Temper tantrums (hysterical)	0.34 + 0.21	1.13 + 1.45	1.75 + 2.71
Stubborn	0.38 + 0.26	0.0	2.0 + 1.46
p-value	0.206	0.003	0.390

4. Discussion

The present study revealed that child behaviour can affect their oral hygiene and caries status. As the children may not follow parent commands properly at this age, child's behavioural attitude can cause inequalities in maintaining proper oral hygiene and can act as a risk factor in increasing chances of dental caries and other oral health related issues.

The present study enrolled children aged between 6-11 years. This age group is crucial since during mixed dentition phase, new hard surfaces are added to the oral cavity and are available for bacterial colonization. This is in accordance with the Jean Piaget theory which states that during this age, the child corresponds to cognitive development and forms a semi- logical reasoning. Also, child at this age is mature enough to show positive compliance. Another factor for this age selection was that it coincides with window of infectivity as suggested by Caufield et al (1993).[12]

There are certain variety of behavioural patterns normally seen in a child. They can be of prime importance in maintaining oral hygiene status.

Psychological parameters are implicated in various disease processes. Manhold and Rosenberg evaluated the correlation between dental disorders and psychological factors.They stated that personality is one of the psychological factors which appear to affect the oral health.[13,14] Frencken JE et al found that there is variation in oral health status of people with specific personality behavior.[15]

Personality traits reproduce the behavior of a person, thereby delivering evidence to the psychosomatic origin of diseases.[16] Dental caries has multifactorial etiology which includes some modifiable and some non modifiable risk factors.

It is widely known that parental attitude play an important role in shaping children's oral health.[1] However, as children grow, they may not listen to their parents. In this regard, oral hygiene status solely relies on child's behaviour and attitude. The present study observed children which were Misleading, Defiant, Spoiled, Arrogant, Whining, Hysterical and Stubborn. A significant association between child's normal characteristic behaviour and dental caries was found. Also, relation with these was established with oral hygiene.

The elevated caries risk among children with different behaviour types can to some extent be explained by their behavioural characteristics. Children with temper tantrum or conduct problem behaviour may have difficulties in performing routine activities such as oral rinsing and tooth brushing. Good oral hygiene requires persistence, patience and routine which can be difficult for these children.

Our study reported that the children with temper tantrums (hysterical) may have multiple teeth with dental caries but at the same time can have proper oral hygiene. The reason for this can be change in dietary pattern. These children

may throw tantrums regarding choice of food to be eaten, consuming diet which is more sugary and less fibrous. As dental caries is multifactorial, the child may have less plaque but more consumption of sticky food can lead to dental caries.

The results of study by Aminabadi et al, also showed that children with poor temperament had high ECC. [17]

In a study done by Jabin Z, and Chaudhary S regarding the association of Child Temperament with Early Childhood Caries, they found that children with temper tantrums had low adaptability and low adjustability and showed dental caries. They further stated that such children's attitude towards the preventive and dietary measures is difficult to modify which render more susceptible for developing carious lesions. [18]

In the present study, stubborn children showed poor oral hygiene. This could be attributed to fact that a stubborn child may overlook parent's instructions that may lead to improper maintainance of oral hygiene.

The present study showed increased levels of dental plaque and caries. The significance of this result may be related to that fact that spoilt children are pampered to an extensive level by the parents. Their wishes are fulfilled by the parents and they often get what they ask for. This leads to the children having food related problems such as eating when not actually needed or eating sugar or unhealthy food leading to poor oral hygiene and subsequently dental caries via a direct correlation and through a nonsignificant indirect path via toothbrushing frequency.

This is in accordance with a study by de Jong-Lenters et al where they used model to assess the association between externalizing behaviour problems and dental caries in children and concluded that preventing dental caries is more challenging in children with externalizing problem behaviour and there is a correlation between behaviour problems and caries. [19]

In the present study, arrogant children showed highest level of dental caries index and low levels of oral hygiene index. Children with lying or misleading behaviour showed more levels of dental plaque but their caries score was less in comparison to other children. Children who had whinning behaviour and defiant behaviour (who ignore things) showed few dental caries and fair oral hygiene.

A study by Quinonez R et al showed that shyness and duration of feeding habit together were associated with ECC. [20]

There is abundant literature available on association of child temperament and dental caries as well as childhood externalizing and internalizing behaviour. Yet it lacks evidence regarding other behaviour types seen in day to day life as a child reflects during growing years. Our study tried to overcome this scarcity by including various common behaviour types. The findings of the present study are of prime importance for the future oral health of the child.

The oral health behaviours reported in this study may not have been an accurate reflection of actual behaviours because parents could have given socially desirable responses and behaviours were measured at a single point in time, and they can change over the years. Conceptually, behaviour type may play an important role in explaining the relationship between oral heath status and dental caries. For example, parents may find it more difficult to maintain healthy behaviours if the child shows resistance towards the rules and structures provided by their parents. Communication may also be more challenging in children with different behaviour patterns. Therefore, creating positive routines, and setting boundaries would be beneficial.

5. Conclusion

Oral health status has a multifactorial etiology with child behaviour as an influential factor. Especially in young children, it may directly or indirectly influence caries risk and oral hygiene.

Efforts to identify behaviour type of children and prevent caries are of great value for the child, the parents, and society. It is essential that dental care is early in these children by noting a child's behavioural characteristics during a dental examination and to have an extended history when behaviour is not age appropriate.

The present study found out an association between child behaviour and their oral health status. It emphasizes how children with different normal behaviour type present with variation in maintaining oral hygiene status leading to poor oral hygiene and dental caries.

In the initial phase, identifying children with these behavioural problems in day to day life and working upon it, will reduce the chances towards in initiation of many dental problems in the long run.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Zhu L, Petersen PE, Wang HY, Bian JY, Zhang BX. Oral health knowledge, attitudes and behaviour of children and adolescents in China. *Int Dent J*. 2003;53(5):289–98.
2. Levy SM, Warren JJ, Broffitt B, Hillis SL, Kanellis MJ. Fluoride, beverages and dental caries in the primary dentition. *Caries Res*. 2003;37(3):157–65.
3. Adair PM, Pine CM, Burnside G, Nicoll AD, Gillett A, Anwar S, et al. Familial and cultural perceptions and beliefs of oral hygiene and dietary practices among ethnically and socioeconomical diverse groups. *Community Dent Health*. 2004;21(1):102–11.
4. Harris R, Nicoll AD, Adair PM, Pine CM. Risk factors for dental caries in young children: a systematic review of the literature. *Community Dent Health*. 2004;21(1):71–85.

5. e VV, e SM, Zaborskis A. Kauno miesto ikimokyklinio amžiaus vaikų burnos higiena ir jų tėvų požiūris į vaikų burnos sveikatą. (Oral hygiene of preschool children in Kaunas city and their parents' attitude towards children's oral health). *Medicina (Kaunas)*. 2005;41(5):427–34.
6. Vanagas G, Ž Milašauskien˙ e, Grabauskas V, e AM. Associations between parental skills and their attitudes toward importance to develop good oral hygiene skills in their children. *Medicina (Kaunas)*. 2009;45(9):718–23.
7. Watanabe K, Dickinson A. Comparative study of preschool children's current health issues and health education In New Zealand And Japan. *Contemp Issues Educ Res*. 2017;10(4):219–24.
8. Matsuyama Y, Isumi A, Doi S, Fujiwara T. Poor parenting behaviours and dental caries experience in 6- To 7-year-old children. *Community Dent Oral Epidemiol*. 2020;48(6):493–500. doi:10.1111/cdoe.12561.
9. Viswanath S, Asokan S, Geethapriya P, Eswara K. Parenting Styles and their Influence on Child's Dental Behavior and Caries Status: An Analytical Cross-Sectional Study. *J Clin Pediatric Dent*. 2020;44(1):8–14.
10. Jianghong L. Childhood Externalizing Behavior: Theory and Implications. *J Child Adolesc Psychiatr Nurs*. 2004;17(3):93–103. doi:10.1111/j.1744-6171.2004.tb00003.x.
11. Staberg M, Norén JG, Gahnberg L, Ghaderi A, Kadesjö C, Robertson A, et al. Behavioural characteristics in externalising children with low and elevated risk for dental caries. *Eur Arch Paediatr Dent*. 2016;17(6):475–84. doi:10.1007/s40368-016-0256-6.
12. Caufield PW, Cutter GR, Dasanayake AP. Initial Acquisition of Mutans Streptococci by Infants: Evidence for a Discrete Window of Infectivity. *J Dent Res*. 1993;72(1):37–45.
13. Manhold JH, Rosenberg N. Study of the possible relationship of personality variables to dental cavities. *J Dent Res*. 1954;33(3):356–63.
14. Anuja P, Vrinda S, Manish J. Oral Health-related Quality of Life in Relation to Oral Health Status among Residents in the Surrounding Areas of Rural Health Training Center Attached to a Medical College Hospital. *J Orofac Res*. 2015;5(4):118–24.
15. Frencken JE, Sharma P, Stenhouse L. Global epidemiology of dental caries and severe periodontitis - A comprehensive review. *J Clin Periodontol*. 2017;44(18):94–105.
16. Shveta J, Jagadeesh KN, Sree S. Assessment of Dental Caries, Periodontal Status and Personality Trait among Population of Dehradun. *J Contemp Dent Pract*. 2020;21(10):1155–8.
17. Aminabadi NA, Ghoreishizadeh A, Ghoreishizadeh M, Oskouei SG, Ghojazadeh M. Can child temperament be related to early childhood caries? *Caries Res*. 2014;48:3–12.
18. Jabin Z, Chaudhary S. Association of Child Temperament with Early Childhood Caries. *J Clin Diagn Res*. 2014;8(12):ZC21–4. doi:10.7860/JCDR/2014/9770.5262.
19. De Jong-Lenters M, Duijster D, Schuller A, Van Loveren C, Verrips E. Dental caries and externalizing behaviour problems in a high-risk child population. *Eur J Oral Sci*. 2018;126(5):417–25. doi:10.1111/eos.12542.
20. Quinonez R, Santos RG, Wilson S, Cross H. The relationship between child temperament and early childhood caries. *Pediatr Dent*. 2001;23(1):5–10.

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