

Risk Factors Associated with Caries Experience in Children with Special Health Care Needs.

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Received: January 2020

Accepted: January 2020

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ABSTRACT

Background: Children with special needs for health care refer to children with any physical, mental, sensory, behavioral, cognitive or emotional impairment or limiting condition that requires differentiated medical management, special intervention in health care, and/or the use of specialized services or programs. Dental treatment is one of the greatest unattended health needs of special children due to other health care needs taking the toll. Hence this study was undertaken to assess the risk factors which are associated with caries experience in special children. **Methods:** Thirty special children aged 5-12 years were included in the study. A questionnaire was completed by the parents about the ability of their children with regards to performing self-care daily activities which included feeding and self-dressing, walking and performing toilet activities, socio-demographic status, medical history, parents education, and oral hygiene practices: tooth brushing, age of beginning tooth brushing, tooth brushing regularity (tooth brushing every day), duration of tooth brushing, frequency of tooth brushing, method of tooth brushing. The oral examination was carried by a single examiner using sterile instruments. DMFT/dmft index (decayed, missed and filled teeth index) was used to assess dental caries. Statistical analysis was done using one way ANOVA **Results:** The caries prevalence was 68.6%. The mean DMFT of the study participants was 2.83 ± 3.23 and mean dmft was 0.35 ± 1.00 . There was a statistically significant association between presence of caries and frequency of brushing as well as dental visit ($P < 0.05$). **Conclusion:** Children with special health care needs may be at increased risk for caries due to difficulty in maintaining proper oral hygiene, difficulty in tooth brushing, sucrose rich diet and overall health conditions.

Keywords: dmft: Decayed missing filled teeth, CP-Cerebral Palsy, DS: Downs syndrome.

INTRODUCTION

Children with special needs for health care refer to children with any physical, mental, sensory, behavioral, cognitive or emotional impairment or limiting condition that requires differentiated medical management, special intervention in health care, and/or the use of specialized services or programs.^[1] Poor oral health in children with special health needs may be attributed to the inability of individuals to achieve adequate oral hygiene, the inability to express their pain and discomfort, or the lack of resources, organizational support, and knowledgeable professionals to evaluate their oral condition.^[2] Dental caries is a multifactor disease in which different individual and contextual factors interact.^[3] The risk for dental caries in children with severe motor and intellectual

disabilities is highest for those with rumination habits.^[4] Identifying risk factors for any disease is important when implementing strategies for disease control, or emotional impairment or limiting condition that require differentiated medical management.^[5] Dental treatment is one of the greatest unattended health needs of special children due to other health care needs taking the toll. Hence this study was undertaken to assess the risk factors which are associated with caries experience in special children.

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MATERIALS AND METHODS

Thirty special children aged 5-13 years were included in the study. Medical records provided information about the medical history of the child. Parents completed a questionnaire about the ability of their children with regards to performing self-care daily activities which included feeding and self-dressing, walking and performing toilet

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activities, socio-demographic status, medical history, parents education, and oral hygiene practices: tooth brushing, age of beginning tooth brushing, tooth brushing regularity (tooth brushing every day), duration of tooth brushing, frequency of tooth brushing, method of tooth brushing.^[6] [Table 1] The oral examination was carried by a single examiner using sterile instruments. DMFT/dmft index (decayed, missed and filled teeth index) was used to assess dental caries. Statistical analysis was done using one way ANOVA.

RESULTS

Table 1: Oral hygiene status of special children according to gender and the age group.

Gender	Good	Fair	Poor
Male	3	18	11
Female	2	11	7
*Total	5	29	18
Age group			
5-9 Years	4	18	8
10-13 Years	1	11	10
Total	5	29	18

Table 2: Questionnaire for Oral Hygiene Practices in Special Children

Brushing frequency	Once daily	Two or more times	
Mode of cleaning teeth	Toothbrush	Toothpaste	Powder
Material used for cleaning teeth	Manual Toothbrush	Finger	Powered toothbrush
Dental visit	Never visit	1-3 months	3-6 months
Brushing assistance	Assisted	Un-assisted	Under-supervision
Age of beginning tooth-brushing	3 years	6 years	8 years



Figure 1: Caries in child with epilepsy

Fifty seven percent of children had difficulty in brushing their teeth. In about 23% of children toothbrush was being used as an oral hygiene aid while 24.7% did not use any oral hygiene aids. Brushing was assisted for maximum study participants (91.5%). Only 11.4% were aware about the use of powered toothbrush. The most common barriers faced by the caregivers in

utilizing dental care were uncooperative child and other complications. The caries prevalence was 68.6%. The mean DMFT of the study participants was 2.83 ± 3.23 and mean dmft was 0.35 ± 1.00 . There was a statistically significant association between presence of caries and frequency of brushing as well as dental visit ($P < 0.05$). The sucrose intake index ranged from 0 to 18 with a median of 8. The only covariate associated with an increased risk for caries was the sucrose intake index ($p = 0.035$). Oral hygiene and dental caries correlated clearly as the children with good oral hygiene had the lowest mean caries score 5.8 ± 7.32 , followed by those with fair 9.72 ± 3.3 and poor oral hygiene 11.55 ± 3.05 . These differences in mean caries score were statistically significant ($p=0.012$) [Table 2]



Figure 2: Caries in child with autism

DISCUSSION

Oral health service provides patients and their parents and caregivers with an orientation towards dental care, intensive home biofilm control training and professional early non-operational intervention.^[7] Care at home involves careful brushing and the use of toothpaste fluoride. We considered parents' and caregivers' focus on oral hygiene to be very important because of the low average age and high motor difficulties of this group of patients. In most of the cases, teeth were brushed by their mothers. The oral hygiene is a preventive measure that includes a set of practices for the conservation of dental and periodontal health. The relatively high DMFT scores described in our sample of children may be attributed to their difficulty in maintaining oral hygiene, poor muscular co-ordination and muscle weakness interfering with routine oral hygiene procedures. Maintaining good oral hygiene is essential for good oral health. The various barriers for access to dental care were uncooperative child, medical complications, financial problems as well as transport. The increased caries experience may be related to the physical disabilities which could be a barrier to oral care, improper oral hygiene practices followed.^[8] The significant role of behavioral factors disclosed by our study, including assisted oral hygiene and reduced sugar intake emphasizes

the need to educate parents and caregivers on their active role in participating in preventive programs to ensure appropriate supervision of daily oral hygiene.^[9] Raising caretaker awareness regarding the importance of supervised tooth brushing and limiting the intake of sucrose rich diet is very important.

However not all children with special health care needs are at high risk of caries, and prevention programs should be tailored to individual risk factors. Attention to the patient's need for a cariogenic diet, use of medications that may be dosed in sugary suspensions or cause xerostomia, inability to maintain optimal oral hygiene, decreased salivary buffering capacity, and other condition-specific caries risk factors can help providers identify successful prevention strategies. Children who experience problems with muscle tone, such as those with muscular dystrophy or cerebral palsy (CP), or with genetic conditions, such as Down syndrome (DS), have fewer caries, less plaque deposition, and better gingival health than healthy controls.^[10,11] Children with epilepsy often have concomitant intellectual and motor disabilities that make oral hygiene difficult and hence more prone to caries. In one study, when compared to healthy controls children with epilepsy had significantly higher caries experience, brushed their teeth less often, and had worse self-rating of their oral health. In addition, common antiepileptic medications, such as phenytoin, can cause gingival overgrowth that also makes oral hygiene challenging.^[12,13] Oral aversions are common in children with autism, and are associated with increased plaque levels and caries experience. Intellectual disabilities may also limit comprehension of the importance of self-care, resulting in poor oral hygiene.^[14] The findings of the research also confirm the need for these kids to receive preventive therapy. Due to the greater incidence of periodontal illnesses, dental caries and structural irregularities among these kids relative to those in the general population, receiving prompt dental services is of specific significance to kids with disabilities. For kids with unique health requirements and healthy children, regular oral health training is very essential.

CONCLUSION

Inability to maintain proper oral hygiene, difficulty in tooth brushing, sucrose rich diet and overall health conditions increases the risk for caries in children with special health care needs. Regular follow up and regular fluoride treatment should be implemented to decrease the risk for caries in these children. In addition to encouraging optimal oral hygiene, clinicians should address risk factors resulting from characteristics of the individual's underlying condition/treatment. Understanding

these factors will help oral health professionals formulate and implement effective caries prevention strategies.

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How to cite this article: Lone N, Ifzah. Risk Factors Associated with Caries Experience in Children with Special Health Care Needs. *Ann. Int. Med. Den. Res.* 2020; 6(2):DE16-DE18.

Source of Support: Nil, **Conflict of Interest:** None declared