



ORAL HYGIENE PRACTICES, DIETARY HABITS AND ITS RELATION TO DENTAL CARIES AMONG CHILDREN AGED 5-12 YEARS LIVING IN URBAN SLUMS OF GUWAHATI CITY: A CROSS SECTIONAL STUDY

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KEYWORDS :

INTRODUCTION:

Oral health is one of the most significant components in the normal development of child. Oral health problems or illnesses can unfavorably influence quality of life and have a direct or an indirect impact on general health and future development of a child¹. Oral diseases in children are reported to affect their everyday activities both at school and at home. Moreover, their psychological impact of these diseases often diminishes their quality of life². Good oral health status at a young age is of the utmost importance for children's development, overall health and well being³.

Epidemiological studies have revealed that dental caries are the most prevalent chronic disease worldwide in the pediatric community and represent a costly burden to health care services⁴. Dental caries has long been a global health problem⁵. It not only affects oral health but also has a deleterious effect on health and quality of life. Dental caries which is untreated in deciduous teeth was the tenth most common condition, influencing 621 million youngsters around the world⁶. Numerous kids have deficient oral and general health due to active and uncontrolled dental caries. Caries status of young, permanent dentition is closely related to the status of the primary dentition, indicating the importance of understanding the risk factors for caries in the early years of life⁷. 60-90% children are affected by dental caries as reported by World Health Organization (WHO)⁸. Among children aged 2-8 years age, 37% had dental caries in their primary teeth as reported by the National Health and Nutrition Examination Survey (2011-2012). According to the reaffirmed insights by the United States General's report in 2016, among children and adolescents' dental caries is 4-5 times more common than asthma⁹.

Dental caries are a multifactorial disease, with many risk factors contributing to their initiation and progression. The risk factors include biological, environmental or socio-behavioral³. High consumption of sucrose, sweet drinks and high sugar intake between meals are associated with dental caries among preschoolers. The quality of a child's oral hygiene practices and the parents' ability to withhold calorogenic snacks are also factors associated with dental caries¹⁰. Socio-economic factors like income, education level and family size also impact disease prevalence. Studies conducted earlier have reported poor oral hygiene among

children to be associated with the onset of dental caries¹¹. There are also reports which specifically say that brushing twice daily is important in preventing teeth caries¹¹. Likewise other factors like frequency and duration of brushing, time of brushing, flossing etc should be studied and improved among individuals of different age groups and also in different parts of the world. So, there are many factors that contribute to oral hygiene practices. Children from urban areas in developing countries experience a higher prevalence of dental caries as compared to industrialized countries,, where the highest caries rates have been observed among deprived social groups and ethnic minorities¹²

The global prevalence of childhood caries varies widely, with the lowest prevalence reported in some Western countries, such as Sweden, Italy and the USA¹³. Conversely, a higher prevalence has been reported in the Middle East, where many countries are still undergoing economic transition and the health care system is still developing¹⁴. Despite the fact that oral health care is free for United Arab Emirates (UAE) nationals, a high prevalence of dental caries (range: 74.1-83%) among 4- to 5-year-olds and a high decayed, missing and filled teeth index (dmft) (range: 3.07-10.9) have been reported in different areas of the UAE¹⁴. A study conducted in Abu Dhabi in 1998 found a high prevalence of dental caries in children aged 2, 4 and 5 years. Thus, dental caries is a serious public health burden medically, socially and financially¹⁵

Rationale

There is a lack of accurate data or exact information on prevalence of dental caries both at national and local levels. In spite of preventive measures and awareness, prevalence rate of dental caries is steadily increasing in our country. So, significant attention should be given to primary teeth. So the present study was done to identify various risk factors associated with dental caries of children which will help in reducing the burden of this disease and would provide a baseline data to setup an effective preventive program in the future.

AIMS AND OBJECTIVES:

- 1) To estimate the prevalence of dental caries among children of 5-12 years in urban slums of Guwahati, Kamrup metro district.

2) To assess different risk factors associated with dental caries.

MATERIALS AND METHODS:

- **Study design:** Community based Cross Sectional Study.
- **Study area:** The study was conducted in 10 urban slums of Guwahati City.
- **Study Period:** 15th April 2023 to 15th June 2023.
- **Study Population:** Children in the age group of 5-12 years residing in the slums of Guwahati city
- **Inclusion Criteria:** Children in the age group of 5-12 years whose parents gave consent for the study.
- **Exclusion Criteria:** Parents who did not co-operate to take interview as well as clinical examination of the teeth of their children

Study sample:

The study prevalence of dental caries is taken to be 62.1% based on the study named "Prevalence of dental caries in school going children of Dibrugarh town, Assam"¹⁶. Taking absolute error of 10%, the sample size calculated to be 94 using the formula $N = 4pq/l^2$.

Study procedure:

According to Guwahati Municipality Corporation in the year 2020, there are 100 registered slums in Kamrup metro (Guwahati City). Out of these slums, 10 slums were randomly selected for the study purpose. From each slum, 10 study participants in the age group 5-12 years were selected.

Clinical examination for dental hygiene was done in the mouth using a torch light and a magnifying glass. In this examination, any bleeding gums, rawness of the oral cavity were also noted. Any dental prescriptions of study participants found during the interview were also reviewed. The study subjects were interviewed using pre designed semi structured schedule

Study technique: Interview method and non invasive oral examination.

Study tools:

1. Pre tested semi structured questionnaire.
2. Torch
3. Magnifying glass.

RESULTS:

In our study, the prevalence of dental caries is found to be 44%. Out of this dental caries is found to be highest among children aged 8 to 10 years old. In contrast, children aged 5 to 7 years old have the lowest prevalence of dental caries, with only 18% of them having dental caries.

Out of 94 participants, 30% of children belong to age group of 5-7 years, 38% of them are in 8-10 years age group and 32% of children are in 11-12 years age group.

Table 1: Distribution of children based on their socio-demographic characteristics

Variables		Gender				Total	Percentage
		Male		Female			
		No.	Percentage	No.	Percentage		
Age	5-7 Years	12	43%	16	57%	28	30%
	8-10 Years	15	42%	21	58%	36	38%
	11-12 Years	18	60%	12	40%	30	32%

Parents' Education	Illiterate	3	37%	5	63%	8	8.5%
	Primary	14	48%	15	52%	29	31%
	M.P.	10	56%	8	44%	18	19%
	High School	7	50%	7	50%	14	15%
	Matriculation	5	45%	6	55%	11	12%
	Higher Secondary	4	44%	5	56%	9	9.5%
	Graduation	2	40%	3	60%	5	5%

Regarding parents' education, 8.5% of them are illiterate, 31% of them had their primary education, 15% of them had completed their high school education, 12% of them had completed their matriculation and 5% of parents had completed their graduation and went for higher studies. Females have a higher prevalence of dental caries than males (58.8% vs. 41.2%).

Table 2: Distribution of the children based on their oral hygiene practices

Variables		Frequency	Percentage
Frequency of brushing	Irregular	20	21%
	Once daily	48	51%
	Twice daily or more	26	28%
Materials used for brushing	Tooth paste	66	70%
	Tooth powder	20	21%
	Charcoal	3	3%
	Others	5	6%

Table 2 shows 21% of children brush their teeth irregularly, 51% of them brush once daily and 28% of them brush twice daily or more. Regarding materials used for brushing, 70% of children use tooth paste, 21% of them use tooth powder and 3% of them use charcoal for brushing. 69% children who spend less than 3 minutes on tooth brushing have a higher prevalence of dental problems than 31% of children who spend more than 3 minutes.

Table 3: Distribution of the children based on their dietary habits

High sugar foods	N (%)	Dental caries	
		Present (N %)	Absent (N %)
Chocolates	85(90%)	75(79%)	10(11%)
Biscuits	66(70%)	40 (42%)	26(28%)
Jam	40(42%)	25 (26%)	15(16%)
Sweets or candies	78(83%)	70(74%)	8(9%)
Soft drinks	57(61%)	36 (39%)	21(22%)
Ice creams	62(66%)	50 (53%)	12(13%)

Table 3 shows among children of 5-12 years old, 90% of children consume chocolates, 83% of them consume sweets or candies, 70% of them consume biscuits and 66% of children consume ice creams. Dental caries developed in about 79% of children who consume chocolates, 74% of children who consume sweets or candies followed by 53% of children who consume ice creams. In our study, 51% children surveyed had dental problems, while 49% did not. Among those with dental problems, 21% reported having toothache and 35% reported having dental caries, and the rest reported tooth sensitivity, tooth loss, braces, or other issues.

DISCUSSION:

In our study, the prevalence of dental caries is highest among children aged 8 to 10 years old, with 44% having dental caries

respectively. In contrast, children aged 5 to 7 years old have the lowest prevalence of dental caries, with only 18% of them having dental caries. In a study done by Sharma H et al among school going children aged 5-15 years (2017), prevalence of dental caries was found to be 62.1%¹⁶. A study conducted by Reddy K S et al among 6-12 years old school children (2019) reported prevalence of dental caries in both primary dentition and permanent dentition was 64.2% and 26.6%¹⁷. In a study done by Kalita C et al (2016) found caries prevalence is much higher in urban (62.77%), contrary to rural where 76% of the sample is caries free¹⁸. A study conducted by Pandey P et al (2021) reported overall prevalence of dental caries was 54.16%¹⁹.

In our study, out of 94 participants, 45 are males and 49 are females. In a study conducted by Reddy K S et al among 6-12 years old school children (2019), there are 1021 males and 979 females¹⁷. In a study done by Quadri M. F. A et al (2018), 249 are males and 251 are females²⁰. In our study, regarding mothers' education, 8(8.5%) of mothers are illiterate, 9(9.5%) of them had their higher secondary education and 5(5%) of them were graduated and went for higher studies. In a study conducted by John J B et al (2015), 117 among tribal, 108 among suburban and 83 among urban were illiterate. 7 mothers among tribal, 14 among suburban and 12 among urban were graduated and went for higher studies. 9 mothers among tribal, 94 among suburban and 63 among urban had their higher secondary education²¹.

Regarding oral hygiene practices, 20(21%) of children brush their teeth irregularly, 48(51%) of them brush once daily and 26(28%) of them brush twice daily or more. In a study conducted by John J B et al (2015), 48% of the suburban and 43% urban school children had twice brushing habit, while majority (85%) of tribal school children brushed once daily²¹. A study conducted by Quadri M.F.A et al (2018) reported 27% children brush teeth irregularly, 31.5% brush once daily and 41.5% brush twice daily or more²⁰. Regarding materials used for brushing, 66(70%) of children use tooth paste, 20(21%) of them use tooth powder and 3(3%) of them use charcoal for brushing. A study conducted by John J B et al (2015), majority of urban and suburban (91.5% and 81%) school children used tooth paste while only (73%) in tribal used toothpaste. Tooth powder was used more by tribal school children (22.40%) when compared to the suburban and urban groups (16% and 4.50% respectively)²¹. In a study conducted by Hans R et al (2022) found that 82% children use toothbrush and toothpaste and 18% children use finger and toothpaste to clean their teeth²².

Regarding dietary habits among children of 5-12 years old, 85(90%) of children consume chocolates, 78(83%) of them consume sweets or candies, 66(70%) of them consume biscuits, 62(66%) of children consume ice creams and 57(61%) children consume soft drinks. In a study conducted by Bassa S (2023) found that 70% children consume sweet foods, 41.9% children consume soft drinks and 77.5% children consume sugared tea²³. A study conducted by Gunaseelan BV et al (2020) reported snacking in-between meals is higher in urban school (100%) compared to rural school (0%). Intake of junk foods is higher in urban school (80%) than in rural school (78%). Intake of carbonated drinks is higher in urban school (74%) than in rural school (68%)²⁴. A study conducted by Quadri M.F.A et al (2018) reported 22.2% children consumed snacks more than three times and 40% children consumed snacks more than two times in between meals per day. 25.1% children consumed high level of sugar per day and 41.2% children consumed moderate level of sugar per day²⁰.

CONCLUSION:

This study provides valuable information on the caries prevalence and the associated risk factors among children of 5-12 years age group. The educational level of mother,

cleaning teeth, sugared coffee consumption, sweet food consumption and milk consumption are the associated factors for dental caries. Behavioural intervention on dental hygiene and dietary habits should be given to children and parents. Overall, the study provides important insights into the current state of dental care and education in the population under investigation, highlighting the need for increased efforts to promote oral health and encourage individuals to seek professional dental care.

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