



**Research Article**

ISSN: 2581-3218

IJDR 2025; 10(2): 44-46

Received: 11-05-2025

Accepted: 08-07-2025

Published: 31-08-2025

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www.dentistryscience.com

doi: 10.31254/dentistry.2025.10204

## Prevalence of Dental Caries Among Children and Adolescents in an Urban Community- A Cross-Sectional Study

Leeza Ghazi<sup>1</sup>, Mustabshera Ansari<sup>1</sup>, Ravindra Balaram Gurav<sup>1</sup>, Pranoy Sam Geevarghese<sup>1</sup>

<sup>1</sup> Department of Community Medicine, Rajiv Gandhi Medical College and Chhatrapati Shivaji Maharaj Hospital, Thane- 400605, Maharashtra, India

### Abstract

**Background:** The prevalence of dental caries remains very high among children and adolescents, despite numerous advances in Dentistry. Therefore the study was conducted to assess the frequency of dental caries and some factors associated with it among children and adolescents in an urban community. **Methodology:** This cross-sectional study was conducted using simple random sampling method among children and adolescents in the age group of 02 to 18 years in urban Thane. The relevant data was recorded in the proforma. Dental examination of the subjects was carried out with the help of Dentist. The data was entered in Microsoft excel and analysed. The statistical significance level was fixed at  $p < 0.05$ . **Results:** Total 211 subjects, aged 02 to 18 years, were enrolled in the study. The overall prevalence of dental caries was 61.14 % among the subjects with 64.60% prevalence among boys, while girls had a slightly lower frequency of 57.14%. The prevalence of dental caries among the subjects aged >12-18 years was higher (70.31%) compared to among aged 02-12 years. The prevalence of dental caries among subjects consuming chocolates daily was 69.88% while among consuming once in a week was 28.89% ( $p < 0.05$ ). The proportion of dental caries among subjects brushing teeth once a day was 71.86% while among brushing teeth twice a day was 20.45% ( $p < 0.05$ ). **Conclusion:** More than half of the subjects were suffering from dental caries. Frequency of chocolates consumption and brushing teeth were associated with this condition. It is a preventable disease which can be alleviated by creating community awareness through health education.

**Keywords:** Dental Caries, Children, Adolescents, Urban Community.

### INTRODUCTION

The prevalence of dental caries remains very high among children and adolescents, despite numerous advances in Dentistry. It is a chronic disease displaying drastic variations in its prevalence across multiple factors. It is one of the leading causes of toothache and dental health issues all over the world. It is a microbiologic infection of the enamel of the teeth that results in localized breakdown and calcified tissue loss although it is a curable condition with proper treatment. It frequently leads to toothache and difficulty in eating food. It affects chewing, smiling and talking activities. This health problem has a significant impact on people's routine life. According to a meta-analysis, the prevalence of dental caries in children aged 03-18 years in our country is 52.00% [1]. It is a significant public health issue and widely prevalent among children and adolescents. Poor oral hygiene, high sugar intake and frequency of brushing teeth contribute to its development. Indian trend shows increase in the prevalence of dental caries since many years [2].

Dental caries is a chronic disease displaying drastic variations in its prevalence across multiple factors [3]. This disease among young children and adolescents is a public oral health challenge in countries with developing economies and economic transition. This condition leads to acute and chronic pain in children and adolescents, affecting their school performance, oral health quality of life, and general child growth and development [4]. This is the most prevalent chronic disease among children which has a high morbidity potential. This disease affects children's concentration in study and dental treatment expense may become financial burden on the family [5]. Dental caries is the destruction of dental hard acellular tissue by acidic by-products from the bacterial fermentation of dietary carbohydrates especially sucrose. It is the most common preventable disease which is recognized as the primary cause of oral pain and tooth loss [6].

As mentioned earlier, dental caries is the most prevalent oral health problem in the world. It is a chronic disease of teeth and anyone is susceptible to this condition in lifetime. In most of the developing countries the prevalence of dental caries continues to increase due to vast changes in the lifestyle. This disease is also related to urbanization. India also faces an alarming increase in the prevalence of dental caries [7].

**\*Corresponding author:**

**Dr. Ravindra Balaram Gurav**

Department of Community  
Medicine, Rajiv Gandhi Medical  
College and Chhatrapati Shivaji  
Maharaj Hospital, Thane-  
400605, Maharashtra, India  
Email: drrbgurav65@gmail.com

Change in the dietary pattern and economic growth have led to compromised oral health status among adolescents population in India. The community based dental caries prevention has become a priority recently [8]. Dental caries is widely prevalent all over the world but the distribution and severity of this health problem varies across the countries and regions. Oral cavity is the mirror which reflects general health of an individual [9].

Oral health is an essential component of overall wellbeing is often neglected. Dental caries is among the most widespread oral health problem worldwide. This is one of the prime causative factors of oral discomfort. If this condition is diagnosed timely, the tooth can be restored and if left untreated, it can lead to tooth loss or other complications [10]. So, the study was conducted to assess the frequency of dental caries and some factors associated with it among children and adolescents in an urban community. This will help in the process of implementation of an effective intervention and preventive strategies for dental caries.

## MATERIALS AND METHODS

This cross sectional study was conducted using simple random sampling technique among children and adolescents in the age group of 02 to 18 years in an urban Thane in the month of January 2025. Necessary permission and approval were obtained before conducting the study in the urban community. The survey was done to identify the subjects in the catchment area of the tertiary health care facility in an urban area. Data of the subjects was recorded in predesigned, pretested and formatted proforma. Interview and help of the parents was also taken where required. Dental examination of the subjects was carried out with the help of a Dentist. The findings of the dental examination were noted in the proforma. The subjects with dental caries and other dental as well

as oral health problems were referred to the tertiary health care hospital and followed up. The data was entered in Microsoft excel and analysed. The descriptive and inferential statistics was applied. The statistical significance level was fixed at  $p < 0.05$ .

## RESULTS

Total 211 subjects, ranging in age from 02 to 18 years, were enrolled in the study. A total of 53.55% (n=113) of the subjects were boys, and 46.45% (n=98) were girls. 147(69.67%) subjects were in the age group of 02-12 years while 64(30.33%) were in >12-18 years age group. 21(9.95%), 120(56.87%), 41(19.43%) and 29(13.74%) subjects were from Anganwadi, primary school, secondary school and higher secondary school respectively. The overall prevalence of dental caries was 61.14 % (n=129) among the subjects with 64.60% (n=73) prevalence among boys, while girls had a slightly lower frequency of 57.14% (n=56). The prevalence of dental caries among the subjects aged >12-18 was higher i.e. 70.31% (n=45) compared to the prevalence i.e. 57.14% (n=84) among the subjects belonging to 02-12 years. The prevalence of dental caries among the subjects studying in higher secondary standard was highest (72.41%) followed by among the subjects attending Anganwadi (71.43%). (Table-1)

Of the 211 subjects, 166(78.67) were eating chocolates daily while 45(21.33%) were eating once in a week. 167(79.15%) subjects were brushing teeth once in a day while 44(20.85%) were brushing teeth twice in a day. The prevalence of dental caries among subjects consuming chocolates daily was 69.88% (n=116) while among subjects consuming chocolates once in a week was 28.89% (n=13) ( $p < 0.05$ ). The proportion of dental caries among subjects brushing teeth once a day was 71.86% (n= 120) while among subjects brushing teeth twice a day was 20.45% (n= 09) ( $p < 0.05$ ). (Table-2)

**Table 1:** Age, gender and educational status wise distribution of dental caries among the subjects (n=211)

Variables and categories		Total	Dental Caries		P value
			Present	Absent	
		N (%)	N (%)	N (%)	
		211(100.0)	129(61.14)	82(38.86)	
Age groups in years	2-12	147(69.67)	84(57.14)	63(42.86)	0.07
	>12-18	64(30.33)	45(70.31)	19(29.69)	
Gender	Boys	113(53.55)	73(64.60)	40(35.40)	0.27
	Girls	98(46.45)	56(57.14)	42(42.86)	
Educational status	Anganwadi	21(9.95)	15(71.43)	06(28.57)	0.06
	Primary school	120(56.87)	68(56.67)	52(43.33)	
	Secondary school	41(19.43)	25(60.98)	16(39.02)	
	Higher Secondary school	29(13.74)	21(72.41)	08(27.59)	

**Table 2:** Frequency of chocolates consumption and brushing teeth in a day wise distribution of dental caries among the subjects (n=211)

Variables and categories		Total	Dental Caries		P value
			Present	Absent	
		N (%)	N (%)	N (%)	
		211(100.0)	129(61.14)	82(38.86)	
Frequency of chocolate consumption	Daily	166(78.67)	116(69.88)	50(30.12)	0.00
	Once in a week	45(21.33)	13(28.89)	32(71.11)	
Frequency of brushing teeth in a day	Once	167(79.15)	120(71.86)	47(28.14)	0.00
	Twice	44(20.85)	09(20.45)	35(79.55)	

## DISCUSSION

In our study, a total of 211 subjects, ranging in age from 02 to 18 years, were enrolled. A total of 53.55% (n=113) of the subjects were boys, and 46.45% (n=98) were girls. The overall prevalence of dental caries was 61.14 % (n=129) among the subjects, with 64.60% (n=73) prevalence among boys, while girls had a slightly lower frequency of 57.14% (n=56). The prevalence of dental caries among the subjects studying in higher secondary standard was highest (72.41%) followed by among the subjects attending Anganwadi (71.43%). The prevalence of dental caries among the subjects aged >12-18 was higher i.e.70.31% (n=45) compared to the prevalence i.e. 57.14% (n=84) among the subjects belonging to 02-12 years. S. Mohanty et al [1] observed 60.00% prevalence of dental caries among children in Odisha. Age, a high frequency of sugar and chocolate consumption, and poor socioeconomic status were found to be associated with a high risk of dental caries. Kuzhali S. et al [2] in their study in urban Chidambaram observed 58.80% prevalence of dental caries among 13 and 14 years old school going children. The prevalence was higher among the boys (62.10%).

Pandey P. et al [3] in their study in Indian population observed 54.16% overall prevalence of dental caries and 52.00% in children aged 3-18 years. Hawa Shariff Mbawalla et al [4] in their study observed, 17.00% overall prevalence of dental caries among the Tanzanian children. Taufan Bramantoro et al [5] in their study observed, 53.00% prevalence of dental caries among the primary school children in Surabaya, Indonesia. They also observed toothbrush usage, soda consumption and educational level of father were the associated factors for dental caries. In the present study, the prevalence of dental caries among subjects consuming chocolates daily was 69.88% (n=116) while among subjects consuming chocolates once in a week was 28.89% (n=13) (p<0.05). The proportion of dental caries among subjects brushing teeth once a day was 71.86% (n= 120) while among subjects brushing teeth twice a day was 20.45% (n= 09) (p<0.05). Thus it was observed that, there was a strong relationship between frequency of chocolate consumption and the presence of dental caries. Also, there was a strong correlation between frequency of brushing teeth and the existence of dental caries. Khushbu Yadav et al [6] in their study mentioned, prevention of the dental caries is more affordable. They also said, dental hygiene and dietary modifications are needed to prevent this condition.

Nimmy P et al [7] in their study observed the collective dental caries prevalence for Tamil Nadu state, India, from 22 studies with 33,584 study participants was 42.80%, with a 95% confidence interval of 42.30-43.40%. Arthi Veerasamy et al [8] in their study observed the prevalence of dental caries among adolescents in rural and urban areas of Tamil Nadu was 61.40%, with an average DMFT score of 2.03. Wahied Khawar Balwan et al [9] in their study mentioned, dental caries affects all the age groups with teeth, both the genders and all socio-economic groups. Poor oral hygiene and food habits play a major role in the occurrence of dental caries. Sticky carbohydrate foods especially junk food and snacks get stagnated on the tooth surfaces. If they are left retained for long time, it can initiate dental caries. Children do suffer more due to dental caries because of craving for sweets and chocolates. Miglani S et al [10] in his article mentioned, data regarding the magnitude of the problem of dental caries is required to frame preventive strategies, policies and manpower allocation for the prevention and control of dental caries among all the age groups. The findings of our study were almost similar to findings of other studies conducted in urban areas.

## CONCLUSION

In the present study, it was observed that more than half of the subjects were suffering from dental caries. Frequency of consuming chocolates and brushing teeth were associated with the dental caries. The findings of the study can guide the development and improvement of the preventive interventions to combat dental caries through implementation of oral health program, thereby fostering better oral

health and overall wellbeing among the children and adolescents. It is a preventable disease which can be alleviated by creating community awareness through health education.

## Conflicts of Interest

The author reports no conflicts of interest.

## Funding

None declared.

## ORCID ID

Leeza Ghazi: <https://orcid.org/0009-0005-0254-898X>

Mustabshera Ansari: <https://orcid.org/0009-0008-8732-9939>

Ravindra Balaram Gurav: <https://orcid.org/0009-0009-3537-5586>

Pranoy Sam Geevarghese: <https://orcid.org/0009-0004-2888-0641>

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### HOW TO CITE THIS ARTICLE-

Ghazi L, Ansari M, Gurav RB, Geevarghese PS. Prevalence of Dental Caries Among Children and Adolescents in an Urban Community- A Cross-Sectional Study. *Int J Dent Res* 2025; 10(2):44-46. doi: 10.31254/dentistry.2025.10204

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