Original Article

Prevalence of Dental Caries in 6–12-Year-Old School-Going Children in Rishikesh City of Uttarakhand State and to Correlate with Mother's Education, Occupation, and Oral Hygiene Measures

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Abstract

Background: The present study was conducted to assess the prevalence of dental caries in 6–12-year-old school-going children in Rishikesh city of Uttarakhand state and to correlate with mother's education, occupation, and oral hygiene measures. **Materials and Methods:** A total sample of approximately 1200 school-going children including both (males and females) aged 6–12 years of Rishikesh were examined; oral examination of the children was performed in classroom with the help of self-designed questionnaires according to their respective age groups. The findings of the present study were then recorded and analyzed statistically. **Results:** The results of the present study revealed that the prevalence of dental caries was more in males (87.2%) as compared to females (75.7%). It was noted that caries prevalence was significantly more among illiterate mother followed by primary school certificate as a compared to profession honors. **Conclusion:** The present study provides evidence that having a mother who works in professional, skilled and service are associated with a lower prevalence of dental caries in children. Despite the numerous limitations, our study provides valuable insights into the effects of parental occupations on dental caries in children.

Keywords: Dental caries, Mother education, Oral hygiene, Prevalence.

Introduction

Dental caries is the most common chronic disease of mankind present in oral cavity. According to the WHO, "Dental Caries is defined as a localized post eruptive, pathological process of external origin, involving softening of hard tooth tissues, and proceeding into the formation of cavity." The mouth is regarded as the mirror of the body and the gateway to good health and even within small regions of countries. It varies with age, sex, socioeconomic conditions, ethnicity, diet, medical conditions of the patient, and oral hygiene practices. It is widely known that dental caries is one of the preventable oral health problems and the most common chronic infectious, childhood diseases.[1] It has a negative impact on children's quality of life and is a major public health problem in the whole world.[2] Along with dietary factors, sociodemographic factors including parent's socioeconomic status and family income have been associated with dental caries experience.[3] Certain reports point to an inverse relationship between high mother's education and low caries experience of their children.[4] The employment status of the mother is a measure of socioeconomic status of the family.

Good oral hygiene is an important primary preventive procedure that can prevent dental caries. Children, who brush their teeth less than once a day, and do not use fluoride toothpastes, have a higher risk of dental caries.[5] Globally, it has been estimated that 60%–90% of schoolchildren have dental caries; this means that six to nine children in every 10 are affected by tooth decay.[6] Oral health affects both physically and psychologically.[7] Children with dental caries have difficulties in sleeping, playing, eating, performing academic

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activity, and communication problems due to missing, discolored, or damaging teeth. In general, it affects children's physical growth, self-esteem, and social development.[8]

Materials and Methods

The present study was conducted to assess the prevalence of dental caries in 6–12-year-old school-going children in Rishikesh city of Uttarakhand state and to correlate with mother's education, occupation, and oral hygiene measures. A total sample of approximately 1200 school-going children including both males and females aged 6–12 years of Rishikesh were examined. A written consent was obtained from the school authorities before the commencement of this study. Informed consent was obtained from mothers/guardians for the examination of their children. Approval to carry out the study was obtained from the Ethical Committee of the Institution (485489). An investigator administered pro forma was used for data collection consisting of two parts. The first part was used to record the demographic details of the patient and the second part recorded the data related to oral hygiene. The caries and oral hygiene status were calculated using DMFT/dmft index and OHI. The subjects were examined using plain mouth mirror and probe. All the data were entered into the pro forma and results were calibrated using a statistical analysis.

Results

The descriptive statistics for demographic characteristics of the participants presented show that a total of 1200 school-going children participated in the present study of which 624 (52%) were male and 576 (48%) were female.

The prevalence of decayed teeth was compared between males and females using the Chi-square test. Decayed teeth were found to be significantly more among males in comparison to females (Table 1).

The prevalence of decayed teeth was compared between different frequencies of tooth brushing using the Chi-square test. Decayed teeth were found to be significantly more among subjects who cleaned their teeth once daily in comparison to twice and thrice daily (Graph 1).

Based on the mother education, the prevalence of decayed teeth was compared among the 1200 children including both (males and females). The caries prevalence was significantly more among illiterate followed by primary school certificate, middle school certificate, high school certificate, intermediate or post high school diploma in comparison to graduate or post graduate, and profession or honors (Graph 2).

The comparison of the prevalence of decayed teeth was done among mothers occupational groups using the Chi-square test. The prevalence of decayed teeth was significantly more among children whose mothers were semi-skilled and unskilled worker which were significantly more among children whose mothers were clerical, skilled worker, and unemployed which were significantly more among children whose mothers were professional and semi-professional (Graph 3).

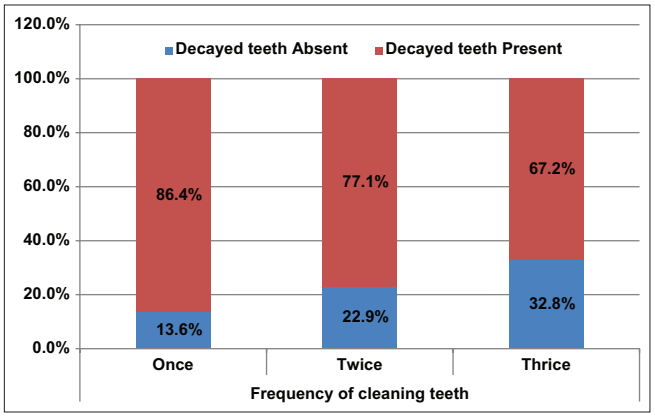
Discussion

Dental caries results from a complex interaction of factors such as host susceptibility, bacteria, diet, and time (duration). The bacteria and sugary food act together to form acid productions that result in teeth cavitation.[9] The impact of dental caries

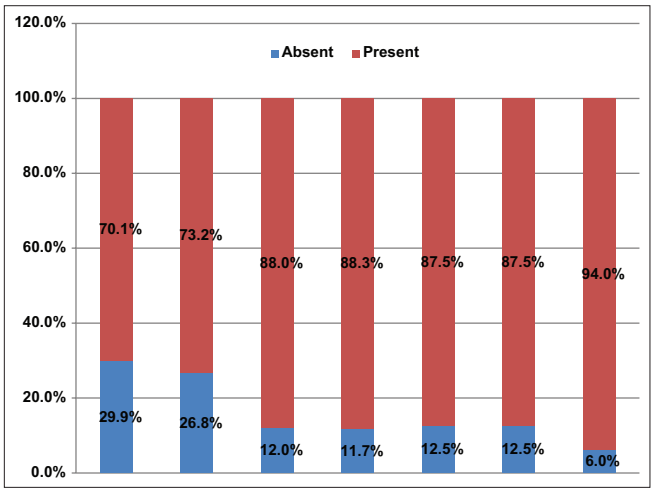
Table 1: Prevalence of decayed teeth among males and females

Gender	Prevalence of decayed teeth		Total
	Absent	Present	
Male	80	544	624
	12.8%	87.2%	100.0%
Female	140	436	576
	24.3%	75.7%	100.0%
Total	220	980	1,200
	18.3%	81.7%	100.0%

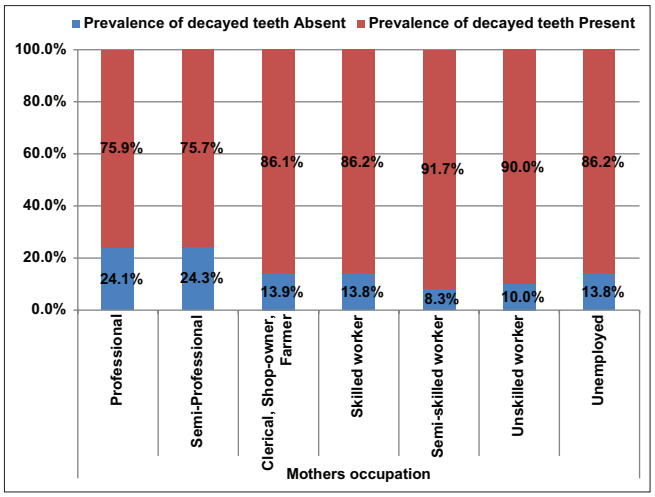
Chi-square=3.412, *P*=0.020*. Chi-square test. *Significant difference



Graph 1: Prevalence of decayed teeth among patients with different frequencies of tooth brushing



Graph 2: Prevalence of decayed teeth among patients with different mother's educational level



Graph 3: Prevalence of decayed teeth among patients with different mother's occupation level

includes destruction of the dental structure and oral pain which may affect speech, eating, sleeping, and swallowing of food. The altered appearance it causes can also lead to low self-esteem and undermine social acceptance.

In the present study, the prevalence of dental caries was significantly higher (87.2%) in males when compared to females (79.9%). This finding was similar to a study conducted in Bihar (India)[10] and Nigeria[11] and Sudha *et al*.[12] The reason could be due to the difference in sex composition of the sample. In contrast to this study, in Iran, females were 1.4 times more likely to have dental caries[13] also Rai *et al*.,[14] Misra and Shee,[15] and Mosha *et al*.[16] who in their studies also reported increased caries prevalence for females.

In this study, oral hygiene practices like frequency of brushing the teeth among the study participants were noted and it was found that 571 (86.4%) participants brushed their teeth once a day while 366 (77.1%) participants brushed their teeth about twice or more than twice a day. Prabhakar *et al*.[17] from their study reported that a total of 2708 (60.3%) study subjects brushed their teeth once daily and 1785 (39.7%) subjects who brushed their teeth twice daily.

There is limited evidence regarding the association between parental occupation and dental caries in young children.

The SES is broadly recognized as one of the significant factors affecting the health condition of an individual or a family. It has been reported that the SES and attitude or demographic factors of parents have a strong influence on the child's oral health. Kuppuswamy scale is commonly used measure of SES in the urban population which consists of three questions, that is, occupation of the head, family income, and parental education.[17]

In this study, high prevalence of dental caries was found in the children of lower SES (91.7%), followed by unskilled (90.0%), skilled (86.2%), semi-professional (75.9%), and professional (75.7%), and the results were statistically significant (P = 0.002). Similar results were reported by various researchers, such as Thyath *et al*.,[18] Katageri *et al*.,[19] Saravanan *et al*.,[20] Ingle *et al*.,[21] Gupta *et al*.,[22] Baggio *et al*.,[23] and Vanobberge *et al*.[24] This could be because of the reason that the individuals from lower SES experience financial, social, and material detriments that compromise their ability to care for themselves and afford professional health-care services. In contrast to the aforementioned authors, Popoola *et al*. stated that the children with higher caries prevalence belonged to the high and middle socioeconomic classes in Nigeria.[25] On the other hand, no association was observed between maternal employment and dental caries in in Japanese,[26] Brazilian,[27] South African,[28] Mongolian,[29] and African-American[30] schoolchildren.

Conclusion

The present study provides evidence that having a mother who works in professional, skilled and service are associated with a lower prevalence of dental caries in children. Despite the numerous limitations, our study provides valuable insights into the effects of parental occupations on dental caries in children. Further studies are needed to clarify the roles of parental socioeconomic factors on dental caries as well as the underlying mechanisms involved. Therefore, dental professionals need to focus more on primary prevention of dental caries through public awareness on oral health promotion and education.

References

1. Syreen S, Anwar A, Ahmad G, Rahman MZ. Prevalence of dental caries among children residing in Muslim dominated area of Laheriasarai, Darbhanga. J Med Sci Clin Res 2018;6:131.
2. Dixit LP, Shakya A, Shrestha M, Shrestha A. Dental caries prevalence, oral health knowledge and practice among indigenous chepang school children of Nepal. BMC Oral Health 2013;13:1-20.
3. Poulton R, Caspi A, Milne BJ, Thomson WM, Taylor A, Sears MR, *et al*. Association between children's experience of socioeconomic disadvantage and adult health: A life-course study. Lancet 2002;360:1640-45.
4. Crocombe LA, Allen P, Bettiol S, Soares LF. Parental education level and dental caries in school children living in Dili, Timor-Leste. Asian Pac J Pub Health 2018;30:128-36.
5. Spencer AJ, Davies M, Slade G, Brennan D. Caries prevalence in Australasia. Int Dent J 1994;44:415-23.
6. Jindal L, Dua P, Mangla R, Gupta K, Vyas D, Gupta P. Dental caries in relation to socioeconomic factors of 6 and 12-year-old schoolchildren of Paonta Sahib, Himachal Pradesh, India: An epidemiological study. Int J Clin Pediatr Dent 2020;13:395-8.
7. Berhane HY, Worku A. Oral health of young adolescents in Addis Ababa-a community-based study. Open J Prev Med 2014;4:640-8.
8. Turton BJ, Durward CS. Management of early childhood caries-a comparison of different approaches. Thai Dent Pub Health J 2017;22:62-77.
9. Chugh VK, Sahu KK, Chugh A. Prevalence and risk factors for dental caries among preschool children: A cross-sectional study in Eastern India. Int J Clin Pediatr Dent 2018;11:238-43.
10. Goenka P, Dutta S, Marwah N, Sarawgi A, Nirwan M, Mishra P. Prevalence of dental caries in children of age 5 to 13 years in district of Vaishali, Bihar, India. Int J Clin Pediatr Dent 2018;11:359-64.
11. Akinyamoju CA, Dairo DM, Adeoye IA, Akinyamoju AO. Dental caries and oral hygiene status: Survey of school children in rural communities, Southwest Nigeria. Niger Postgrad Med J 2019;25:239-45.

12. Sudha P, Bhasin S, Anegundi RT. Prevaelnce of dental caries among 5-13 year old children of Manglore city. J Indian Soc Pedod Prevent Dent 2005;23:74-9.
13. Youssefi MA, Afroughi S. Prevalence and associated factors of dental caries in primary schoolchildren: An Iranian setting. Int J Dent 2020;2020:1-7.
14. Rai B, Shakya A, Shrestha M, Shrestha A. Dental caries prevalence, oral health knowledge and practice among indigenous Chepang school children of Nepal. BMC Oral Health 2013;13-20.
15. Misra FM, Shee BK. Prevalence of dental caries in school going children in an urban area of South Orissa. J Indian Dent Assoc 1979;51:267-70.
16. Mosha HJ, Senkoro AR, Masalu JR. Oral health status and treatment needs among Tanzanian of different age groups, Tanzania. Tanzan Dent J 2005;12:18-27.
17. Shaikh Z, Pathak R. Revised Kuppuswamy and B G Prasad socio-economic scales for 2016. Int J Commun Med Public Health 2017;4:997-9.
18. Thyath MN, Nishad SG, Sharma M, Zaidi I. Impact of socioeconomic status and parental factors on child oral health. A Review of literature. J Adv Med Dent Sci Res 2015;2:153-7.
19. Katageri AA, Arora R, Bhayya D, Patil K. Prevalence of dental caries and its association to maternal education as a risk indicator: A cross section study in Udaipur-Rajasthan. J App Med Sci 2014;2:983-6.
20. Saravanan SP, Lokesh S, Polepalle T, Shewale A. Prevalence, severity and associated factors of dental caries in 3-6 year old children-a cross sectional study. Indian J Dent Res 2014;6:5-11.
21. Ingle NA, Dubey HV, Kaur N, Gupta R. Prevalence of dental caries among school children of Bharatpur city, India. J Int Soc Prev Commun Dent 2014;4:52-5.
22. Gupta R, Gaur KL, Sharma AK, Zafer S, Kewalramani S. Comparison of associating factors of dental caries in urban and rural children in Jaipur, (Raj) India. IOSR J Dent Med Sci 2013;3:55-60.
23. Baggio S, Abarca M, Bodenmann P, Gehri M, Madrid C. Early childhood caries in Switzerland: A marker of social inequalities. BMC Oral Health 2015;15:82.
24. Vanobberge JN, Martens LC, Lesaffre E, Declerck D. Parental occupational status related to dental caries experience in 7-year-old children in Flanders (Belgium). Commun Dent Health 2001;18:256-62.
25. Popoola BO, Denloye OO, Iyun OI. Influence of parental socio-economic status on caries prevalence among children seen at the university college hospital, Ibadan. Ann Ib Postgrad Med 2013;11:81-6.
26. Tanaka K, Miyake Y, Sasaki S, Hirota Y. Socioeconomic status and risk of dental caries in Japanese preschool children: The Osaka maternal and child health study. J Pub Health Dent 2013;73:217-23.
27. Piovesan C, Mendes FM, Ferreira FV, Guedes RS, Ardenghi TM. Socioeconomic inequalities in the distribution of dental caries in Brazilian preschool children. J Public Health Dent 2010;70:319-26.
28. Khan MN, Cleaton-Jones PE. Dental caries in African preschool children: Social factors as disease markers. J Public Health Dent 1998;58:7-11.
29. Jigjid B, Ueno M, Shinada K, Kawaguchi Y. Early childhood caries and related risk factors in Mongolian children. Community Dent Health 2009;26:121-8.
30. Ismail AI, Sohn W, Lim S, Willem JM. Predictors of dental caries progression in primary teeth. J Dent Res 2009;88:270-5.