

ORIGINAL RESEARCH

Incidence of dental caries among a known population: An observational study

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ABSTRACT

Background: The present study was conducted for assessing the incidence of dental caries among a known population. **Materials & methods:** A total of 200 patients were screened during the study period. Only those subjects were included in the present study who came for routine dental checkup. Complete demographic and clinical details of all the patients were obtained. Radiographic evaluation was done in all the patients. All the patients were screened with biochemical and hematological profile. Mouth mirror and probe were used for carrying out clinical examination. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software. **Results:** A total of 200 patients were analyzed. Dental caries was found to be present in 43 percent of the patients. Mean age of the patients with dental caries was 23.5 years. Out of 86 patients with dental caries, 65.11 percent of the patients were males while the remaining were females. Molars were the most commonly involved tooth with dental caries found to be involved in 65.12 percent of the cases. Premolars were involved in 13.95 percent of the cases while canine involvement occurred in 11.63 percent of the cases. **Conclusion:** Routine oral and dental screening programs should be carried out for early detection of dental caries.

Key words: Caries

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INTRODUCTION

Globally, oral diseases have been categorized as the fourth most expensive disease to treat. Oral conditions affected 3.9 billion people, and untreated caries in permanent teeth was the most prevalent condition evaluated for the entire Global Burden of Disease 2010.¹⁻³ Dental caries is defined as a localized, post-eruptive, pathological process of external origin involving softening of the hard tooth tissue and proceeding to the formation of a cavity. Dental caries has been the most common oral health problem in the world. Untreated dental caries can affect the quality of life as a result of pain or discomfort, tooth loss, impaired oral functioning, disfigurement, missing school time and loss of work hours. Furthermore, untreated dental caries is associated with weight loss, repress growth and affects the cognitive functions of young adults.⁴⁻⁶ People living with disability have a higher prevalence of dental caries and decayed, missed, and filled permanent teeth (DMFT) than the general population. However, few authors reported

that the caries rate in people with intellectual disability (ID) is the same as or lower than the general population. Instead, the rates of untreated caries are higher in people with ID. Likewise, another set of authors reported that people living with ID had poor oral health and more caries compared with the general population. This group of disadvantaged populations is more vulnerable to dental caries if they spend most of their time at home and frequently consume cariogenic and unhealthy foods.⁵⁻⁸ Hence; the present study was conducted for assessing the incidence of dental caries among a known population.

MATERIALS & METHODS

The present study was conducted for assessing the incidence of dental caries among a known population. A total of 200 patients were screened during the study period. Only those subjects were included in the present study who came for routine dental checkup. Complete demographic and clinical details of all the patients was obtained. Radiographic evaluation was done in all

the patients. All the patients were screened with biochemical and hematological profile. Mouth mirror and probe were used for carrying out clinical examination. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

RESULTS

A total of 200 patients were analyzed. Dental caries was found to be present in 43 percent of the patients.

Mean age of the patients with dental caries was 23.5 years. Out of 86 patients with dental caries, 65.11 percent of the patients were males while the remaining were females. Molars were the most commonly involved tooth with dental caries found to be involved in 65.12 percent of the cases. Premolars were involved in 13.95 percent of the cases while canine involvement occurred in 11.63 percent of the cases.

Table 1: Incidence of dental caries

Dental caries	Number	Percentage
Present	86	43
Absent	114	57
Total	200	100

Table 2: Data of patients with dental caries

Variable	Number	Percentage
Mean age (years)	23.5	
Gender	Males	65.11
	Females	34.89
Teeth involved	Incisors	9.3
	Canine	11.63
	Premolars	13.95
	Molars	65.12

DISCUSSION

In the year 2016, the first attempt was made to assess the state-wise global disease burden (GDB) of India. The results of this study showed that the five leading individual causes of disability-adjusted life years (DALYs) in India were ischemic heart disease, chronic obstructive pulmonary disease, diarrheal diseases, lower respiratory infections, and cerebrovascular disease. Oral health was totally overlooked and not recorded in this survey. Many oral diseases like oral cancers, periodontal diseases, and dental caries have high prevalence in India and are a matter of concern. It can affect the deciduous or the permanent dentition, and both the coronal and radicular parts of the tooth. The interplay between host- and environment-related factors governs the development and progress of dental caries. There are many factors that may increase the susceptibility of an individual to dental caries or its sequelae.⁷⁻⁹ Hence; the present study was conducted for assessing the incidence of dental caries among a known population. A total of 200 patients were analyzed. Dental caries was found to be present in 43 percent of the patients. Mean age of the patients with dental caries was 23.5 years. Out of 86 patients with dental caries, 65.11 percent of the patients were males while the remaining were females. Molars were the most commonly involved tooth with dental caries found to be involved in 65.12 percent of the cases. Premolars were involved in 13.95 percent of the cases while canine involvement occurred in 11.63 percent of the cases. Tefera AT et al determined the prevalence of dental caries and its predictors among special needs

school students. Four hundred and forty-three students with a mean age of 15.8 ± 3.8 were included in the study. The prevalence of dental caries was 41.5% (95% confidence interval [CI]: 36.3, 46.0) in permanent dentition with a mean DMFT score of 1.3 ± 1.6 . The prevalence of dental caries in primary dentition was 23.1% (95% CI: 11.9, 32.1) with a mean decayed, missed, and filled primary teeth (dmft) score of 1.9 ± 0.2 . Being 7–12 years old (adjusted odds ratios [AOR] = 3.6, 95% CI: 1.6, 8.3), lower grade level (AOR = 2.4, 95% CI: 1.3, 4.4), poor oral hygiene status (AOR = 2.5, 95% CI: 1.3, 4.8), and lack of parental support during tooth brushing (AOR = 2.2, 95% CI: 1.2, 4.1) were independent predictors of dental caries. A significant amount of special needs school students in the study area had dental caries.¹⁰

Trends in periodontal health and tooth loss are less well documented than trends in dental caries. Available evidence suggests that the prevalence of periodontal disease and tooth loss has declined in selected high-income countries, but there are recent suggestions of a higher prevalence of periodontitis in the adult US population than previously reported, coincident with changes in examination criteria from partial- to full-mouth assessment. Also, although the lifetime prevalence of dental caries experience in children, as measured by the DMF index, may have declined in the last 40 y in many high-income countries, information is scarce on the population-level epidemiology of untreated dental caries. Since treated diseases do not cause burden, it is more relevant to assess the decayed component of the DMF index rather than a composite measure of caries

experience.⁶⁻⁹Tafere Yet al determined the prevalence of dental caries and associated factors among patients attending the dental clinic. An institution based cross-sectional study was conducted among 280 systematically selected patients. The data were collected using pre-tested questionnaire and oral examination by a qualified dental professional. Basic hygienic procedures were observed during an oral examination. The teeth were examined for dental caries by the presence of decay, missing and filled teeth. A total of 280 subjects participated in the study; among whom 129 (46.1%) were female and nearly two-thirds of the respondents 208 (74.3%) attended formal education. The study revealed that the overall prevalence of dental caries was 78.2%. Dental caries was lower among respondents who had good oral hygiene status (AOR = 0.05, 95% CI, 0.02, 0.81). Dental caries was higher among participants who earned less than 5000 Eth Birr per month (AOR = 8.43, 95% CI, 2.6, 27.2). Dental caries was lower among respondents who had good knowledge (AOR = 0.51, 95% CI, 0.03, 0.64)¹¹

CONCLUSION

Routine oral and dental screening programs should be carried out for early detection of dental caries.

REFERENCES

1. Marcenes W, Kassebaum NJ, Bernabe E, Flaxman A, Naghavi M, Lopez A, et al. Global burden of oral conditions in 1990-2010: a systematic analysis. *J Dent Res.* 2013 Jul;92(7):592–7.
2. Department of Health Services. National oral health policy 2014 [Internet]. Kathmandu (NP): Oral Health Focal Point, Management Division, Department of Health Services; 2014. [2022 Aug 1;]. <https://mohp.gov.np/uploads/Resources/1657877144550National%20Oral%20Health%20Policy>.
3. Yee R, Mishra P. Nepal national oral health pathfinder survey 2004. *Journal of Nepal Dental Association.* 2005 Apr;7(1):64–8.
4. Wei, H. , Wang, Y.-L. , Cong, X.-N. , Tang, W.-Q. , & Wei, P.-M. (2012). Survey and analysis of dental caries in students at a deaf–mute high school. *Research in Developmental Disabilities*, 33, 1279–1286.
5. White, J. A. , Beltran, E. D. , Malvitz, D. M. , & Perlman, S. P. (1998). Oral health status of special athletes in the San Francisco Bay Area. *Journal of the California Dental Association*, 26, 347–354.
6. Wilson, N. J. , Lin, Z. , Villarosa, A. , & George, A. (2019). Oral health status and reported oral health problems in people with intellectual disability: A literature review. *Journal of Intellectual & Developmental Disability*, 44, 292–304.
7. Dandona L, Dandona R, Anil Kumar G, et al. Nations within a nation: variations in epidemiological transition across the states of India, 1990–2016 in the global burden of disease study. *Lancet.* 2017;390(10111):2437–2460.
8. Marsh P, Martin MV. *Oral Microbiology.* 4th ed., Oxford: Wright; 1999.
9. Curzon ME, Preston AJ. Risk groups: nursing bottle caries/caries in the elderly. *Caries Res.* 2004;38(Suppl. 1):24–33.
10. Tefera AT, Girma B, Adane A, et al. The prevalence of dental caries and associated factors among students living with disability in the Amhara region, Ethiopia. *Clin Exp Dent Res.* 2022;8(6):1505-1515. doi:10.1002/cre2.646
11. Tafere Y, Chanie S, Dessie T, Gedamu H. Assessment of prevalence of dental caries and the associated factors among patients attending dental clinic in Debre Tabor general hospital: a hospital-based cross-sectional study. *BMC Oral Health.* 2018;18(1):119. Published 2018 Jul 4. doi:10.1186/s12903-018-0581-8