

The Prevalence of Nursing Caries in Patna Preschool Children, Bihar

Naveen Kumar^{1*} Pooja² Kunal Kumar³ Farhat Zabeen⁴ Asif Ali⁵

¹Tutor, Department of Public Health Dentistry, Patna Dental College and Hospital, Patna, Bihar, India.

²Intern, Patna Dental College and Hospital, Patna, Bihar, India.

³Private Consultant, Muzaffarpur, Bihar, India.

⁴Private Consultant, Hazaribagh, Jharkhand, India.

⁵Private Consultant, Hazaribagh, Jharkhand, India.

ABSTRACT

Background: Nursing caries is a form of rampant caries in the deciduous teeth of young children. The feature that separates nursing caries as defined here from the traditional rampant caries is the specified absence of lesions on the mandibular incisors.

Materials and Methods: A total number of 250 subjects of age group 2 to 6 were included in the study. Ethical clearance was obtained from the institutional review board. An informed consent were obtained from the parents of the children. The children, aged 2-6 years, were made to sit on a small chair during dental examination. The knee-to-knee examination method was also utilized in very young children.

Results: A total number 39 children were affected. Out of 148 male children examined, 23 were affected from nursing bottle caries (NBC). This is around 15.54% of male child. Out of 102 female children examined, 16 were affected from nursing bottle caries.

Conclusion: The prevalence of nursing caries was 15.6% in Patna preschool population and there was no statistical significance in the incidences of nursing caries between male and female children.

Keywords: Prevalence, nursing caries, Patna.

INTRODUCTION

Nursing caries is a form of rampant caries in the deciduous teeth of young children.¹ The feature that separates nursing caries as defined here from the traditional rampant caries is the specified absence of lesions on the mandibular incisors.² This happens because the lower tooth is protected by act of tongue and lower lip during feeding, and pooled sublingual saliva.³ This is known by different names such as nursing-bottle mouth, nursing-bottle syndrome, night-bottle syndrome, bottle mouth, baby bottle caries, nursing mouth. It is also derived from Streptococcus mutants that is acquired by mother. In 1985, the term 'baby bottle tooth decay' was coined by the healthy mothers-healthy babies

coalition. Early childhood caries is comparatively a new term that defines rampant dental caries in babies and children.⁴

The etiology of nursing caries is indistinguishable from other coronal carious lesion, representing the interaction between pathogenic microorganisms, fermentable carbohydrate substrate, host susceptibility, and time. Uniquely, lesions progress rapidly when cariogenic challenge overwhelms the protective mechanisms.⁵ Time is a vital aspect in the progress of nursing caries and lengthy nursing, especially at night, is a major contributor.^{6,7}

Received: Oct. 15, 2020; Accepted: Nov. 26, 2020

*Correspondence Dr. Naveen Kumar.

Department of Public Health Dentistry, Patna Dental College and Hospital, Patna, Bihar, India.

Email: Not Disclosed

In a deviation to biological factors, demographic factors such as age, oral hygiene, socioeconomic, and cultural characteristics can affect the development of nursing caries. Several studies have reported an inverse relation between oral hygiene status and the incidence of nursing caries. A lower level of parental education, low-income group and single marital status may also predispose to nursing caries.⁶ Nursing caries is a annoying ailment that is difficult to treat in infants and very young children. It may retard the child's health, and results in damage of nutrition and esthetics with accompanying psychological problems.³

Numerous studies have been done to regulate the prevalence of nursing caries. A study in England showed the prevalence has been reported ranging from 6.8-12% and in USA prevalence being reported from 11.0-53.1%.⁸ A very few incidence studies have been done in India. One such study done in Udupi district of Karnataka has reported nursing caries prevalence of 19.44%.⁹

MATERIALS AND METHODS

A total number of 250 subjects of age group 2 to 6 were included in the study. Ethical clearance was obtained from the institutional review board. An informed consent were obtained from the parents of the children. The children, aged 2-6 years, were made to sit on a small chair during dental examination. The knee-to-knee examination method was also utilized in very young children.

Screening procedure Examination

All the children were examined by the same examiner inside the respective schools to minimize intra examiner bias. To minimize the intra examiner variability, the children who were observed on the previous day were reexamined before examining a new batch of children.

Questionnaire

The questionnaire by Winter *et al.*¹⁰ was modified and used in this study. The questionnaire consisted of two parts. The first part consisted of feeding practices and the tooth brushing, and the second part consisted of social factors and social class which had to be filled by the parents of the child with nursing caries.

RESULTS

Table 1: Nursing Bottle prevalence rate

Gender of Children Examined	Number of Children Examined	Children Affected	Caries Prevalence Percentage
Male	148	23	15.54
Female	102	16	15.68
Total	250	39	15.6
P-Value	0.12 (NS)	0.83 (NS)	0.001 (S)

NS: Non-Significant

Table 2: Age wise distribution of cases.

	2 Years	3 Years	4 Years	5Years	6 year
Boys	3	5	6	4	5
Girls	1	4	5	2	4
Total	4	9	11	6	9

A total number of 250 subjects of age group 2 to 6 were included in the study. Ethical clearance was obtained from the institutional review board. An informed consent was obtained from the parents of the children. A total number 39 children were affected. Out of 148 male children examined, 23 were affected from nursing bottle caries (NBC). This is around 15.54% of male child. Out of 102 female children examined, 16 were affected from nursing bottle caries. This is around 15.68% of male child (Table 1). Caries prevalence among the male and female subjects were statically significant. Most children who suffered from NBC belonged to an age group of 4 years followed by 6-year group (Table 2).

DISCUSSION

A total number of 250 subjects of age group 2 to 6 were included in the study. Ethical clearance was obtained from the institutional review board. Out of 148 male children examined, 23 were affected from nursing bottle caries (NBC). This is around 15.54% of male child. Out of 102 female children examined, 16 were affected from nursing bottle caries. This is around 15.68% of male child.

The prevalence of nursing caries in the present study was 15.6%, which is similar to result shown by Tandon and Sethi⁹ in Udupi District of Karnataka. The prevalence reported in most of the Western countries is ranging from 1-75%.⁸ Methodology used in this study is similar to that used by Winter

et al.¹⁰ who reported a prevalence of 8% (1971) and 12%. In a study by Matee et al.¹¹ have reported an overall prevalence of 10.6% in Tanzania and Raadal et al.¹² have reported a prevalence of 5.5% in Sudan, whereas Broderick et al.¹³ have reported a prevalence of 72% and 55% in Navajo and Cherokee children, respectively. Weinstein et al.¹⁴ have reported a prevalence of 29.6% in United States.

Differences within and between studies occurs due no universally accepted definition of nursing caries and no suitable epidemiologic index for nursing caries has been developed. Several researchers have diagnosed nursing caries solely on the basis of the affected tooth. When different formulae is applied for the same population then it yields different prevalence rates.⁸ In the results there was no statistically significant difference in the incidences of NBC between males and females. This study is very similar to the study done by Dilley¹⁵ and Wyne et al.³ In this current study, the mean DFS was 7.1 ± 2.8 in nursing caries children group which is significantly higher to no nursing group.

This is in agreement with that of Harrison et al. However, the DFS in our study was not as high as of Harrison et al.¹⁶ who reported a DFS of 22.3 ± 13.4 . Louie et al.¹⁷ reported a DFS range of 4.80-16.55, whereas Trubman¹⁸ has reported DFS of 2.33 in 3-year-old and 9.99 in 6-year-old children. It is observed that breastfeeding increases the incidence of NBC.

CONCLUSION

The prevalence of nursing caries was 15.6% in Patna preschool population and there was no statistical significance in the incidences of nursing caries between male and female children. From the present study it can be concluded that percentage of nursing caries children and mean DFS increases as the duration of breastfeeding increases. Also, nursing caries increases in children who carry a bottle to bed at night. Mean age of starting brushing is 2.4 years among nursing caries group, which is very late.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Namita, Rai R. Adolescent rampant caries. *Contemp Clin Dent*. 2012;3(Suppl1):S122-S124. doi:10.4103/0976-237X.95122
2. Services I of M (US) D of HC. *Nursing Research: Definitions and Directions*. National Academies Press (US); 1983. Accessed January 2, 2021. <https://www.ncbi.nlm.nih.gov/books/NBK218540/>
3. Wyne A, Darwish S, Adenubi J, Battata S, Khan N. The prevalence and pattern of nursing caries in Saudi preschool children. *Int J Paediatr Dent*. 2001;11(5):361-364. doi:10.1046/j.0960-7439.2001.00291.x
4. Tinanoff N, O'Sullivan DM. Early childhood caries: overview and recent findings. *Pediatr Dent*. 1997;19(1):12-16.
5. Çolak H, Dülgeril ÇT, Dalli M, Hamidi MM. Early childhood caries update: A review of causes, diagnoses, and treatments. *J Nat Sci Biol Med*. 2013;4(1):29-38. doi:10.4103/0976-9668.107257
6. Johnston T, Messer LB. Nursing caries: literature review and report of a case managed under local anaesthesia. *Aust Dent J*. 1994;39(6):373-381. doi:10.1111/j.1834-7819.1994.tb03110.x
7. Ripa LW. Nursing caries: a comprehensive review. :15.
8. Milnes AR. Description and epidemiology of nursing caries. *J Public Health Dent*. 1996;56(1):38-50. doi:10.1111/j.1752-7325.1996.tb02394.x
9. Sudha P, Kulkarni S, Anegundi R, Mahejabeen R. Dental caries prevalence among preschool children of Hubli: Dharwad city. *J Indian Soc Pedod Prev Dent*. 2006;24(1):19. doi:10.4103/0970-4388.22829
10. Winter GB, Rule DC, Mailer GP, James PM, Gordon PH. The prevalence of dental caries in pre-school children aged 1 to 4 years. 1. Etiological factors. *Br Dent J*. 1971;130(7):271-277. doi:10.1038/sj.bdj.4802662
11. Matee MI, Mikx FH, Maselle SY, Van Palenstein Helderman WH. Rampant caries and linear hypoplasia (short communication). *Caries Res*. 1992;26(3):205-208. doi:10.1159/000261444

12. Raadal M, Elhassan FE, Rasmussen P. The prevalence of caries in groups of children aged 4-5 and 7-8 years in Khartoum, Sudan. *Int J Paediatr Dent.* 1993;3(1):9-15. doi:10.1111/j.1365-263x.1993.tb00041.x
13. Broderick E, Mabry J, Robertson D, Thompson J. Baby bottle tooth decay in Native American children in Head Start centers. *Public Health Rep Wash DC* 1974. 1989;104(1):50-54.
14. Weinstein P, Domoto P, Wohlers K, Koday M. Mexican-American parents with children at risk for baby bottle tooth decay: pilot study at a migrant farmworkers clinic. *ASDC J Dent Child.* 1992;59(5):376-383.
15. Tyagi R. The prevalence of nursing caries in Davangere preschool children and its relationship with feeding practices and socioeconomic status of the family. *J Indian Soc Pedod Prev Dent.* 2008;26(4):153. doi:10.4103/0970-4388.44030
16. Harrison R, Wong T, Ewan C, Contreras B, Phung Y. Feeding practices and dental caries in an urban Canadian population of Vietnamese preschool children. *ASDC J Dent Child.* 1997;64(2):112-117.
17. Louie R, Brunelle JA, Magglore ED, Beck RW. Caries Prevalence in Head Start Children, 1986-87. *J Public Health Dent.* 1990;50(5):299-305. doi:10.1111/j.1752-7325.1990.tb02139.x
18. Trubman A, Silberman SL, Meydrech EF. Dental caries assessment of Mississippi Head Start children. *J Public Health Dent.* 1989;49(3):167-169. doi:10.1111/j.1752-7325.1989.tb02055.x