ORIGINAL ARTICLE

Association between breast feeding pattern and nursing caries in children attending outpatient department of Dhaka Dental College

Islam MS[1], Tonwy TLJK[2], Parvin F[3], Ansary JA[4], Shahid H[5]

Abstract

This cross-sectional study was conducted to determine the association between breastfeeding patterns and nursing caries in children attending the outpatient department of Dhaka Dental College & Hospital, Mirpur, Dhaka, using a pre-tested questionnaire. The study was carried out among 236 mothers who have brought their children aged between 2-5 years with nursing caries. The mean dfs score of the children was found 20.61 ± 5.62. Among them majority of the children had a dfs score more than 22 (39.8%). The respondents reported a mean breastfeeding duration of 19.03 ± 7.24 months. Among them majority of the respondents breast fed their child Up to 24 months (51.3%) and breast fed their child at will (56.4%). Statistical significance was found between the duration of breast feeding and their child's dfs score (p=0.024) and statistical significance was also found with the respondent's way of their child feeding and their child's dfs score (p=0.000). So, more preventive and awareness building program should be arranged regarding nursing caries and feeding pattern starting even before the childbirth.

Keywords: *Nursing caries, breastfeeding pattern.*

(Pioneer Journal of Dental Research & Health Science, Vol.02, No.01.)

Affiliation

Dr. Md. Samiul Islam
Assistant Professor (CC)
Department of Pedodontics & Dental Public Health,
Pioneer Dental College, Dhaka

Dr. Tanjina Lanar Jumanna han Tonwy
Lecturer
Department of Oral Surgery,
Sir Salimullah Medical College and Hospital, Dhaka

Dr. Fahmida Parvin
Lecture,
Department of Dental Public Health,
Pioneer Dental College, Dhaka

Dr. Jamil Ansary
Assistant Professor
Head of the Department
Department of Science of Dental Materials,
Pioneer Dental College, Dhaka

Dr. Hasibush Shahid Hasib
Assistant Professor (CC)
Department of Prosthodontics,
Pioneer Dental College, Dhaka

Article Information

Received Date: 23.01.2025
Accepted Date: 27.01.2025
Volume: ***Vol.02, No.01.***

Address of Correspondence:

Dr. Md. Samiul Islam
Assistant Professor (CC)
Department of Pedodontics & Dental Public Health,
Pioneer Dental College, Dhaka
Email: sunny_dent27@yahoo.com

Introduction

Dental caries is the most prevalent chronic illness among children, occurring at a rate five times higher than asthma and seven times more frequently than hay fever.[1] The American Academy of Pediatrics identifies it as the most widespread communicable disease in children, impacting 41% of young individuals in the United States.[2] "Nursing-bottle syndrome" (NBS), also known as "baby bottle tooth decay" or "nursing caries," affects the primary teeth of young children and can manifest as early as nine months old. This condition is linked to extended, unrestricted bottle or breastfeeding and the use of sweetened pacifiers.[3] Nursing caries is a distinct form of rapid decay in infants' primary teeth, characterized by the typical absence of decay in the mandibular incisors, setting it apart from traditional rampant caries.[4] Numerous studies have explored the prevalence of nursing caries. In England, prevalence rates range from 6.8% to 12%, while in the USA, they vary from 11.0% to 53.1%.[5] Research in India reported a 19.2% prevalence of nursing caries among preschool children.[6] The intraoral decay pattern of nursing caries is distinctive and indicative of the condition. The four maxillary incisors are primarily affected, whereas the four mandibular incisors generally remain unaffected. Other primary teeth, such as canines, first molars, and second molars, may be involved depending on the duration of the carious process, but the severity of lesions is typically less than that of the maxillary incisors.[4] The syndrome is associated with harmful feeding practices rather than child neglect.[7] The caries syndrome arises from prolonged exposure of primary teeth to fermentable liquids like milk. This condition can lead to severe symptoms, including pain and infection, and may be costly to treat.[8] Regular intake of fermentable carbohydrates, such as juices, milk, and sodas, without proper oral hygiene, heightens the risk of caries due to extended contact between sugars in food and cariogenic bacteria.[9] This risk is particularly high when these substances are consumed from a feeding bottle

and remain in contact with teeth for extended periods, such as overnight.[10] Unrestricted, on-demand nighttime breastfeeding after the eruption of a child's first tooth can also increase the risk of caries.

Despite nursing caries being multi-factorial, it may be preventable. Tooth brushing regularly aids in removal of plaque from the accessible areas and therefore prevents formation and development of dental caries.[11] However, due to physical and cognitive immaturity of the child at the ages of 2 – 5 years, adequate plaque control can only be achieved by the caregiver. Other preventive factors include proper nursing habits and reduction of cariogenic food intake by the child. Early diagnosis of this devastating disease pattern is more difficult in Bangladesh because Parents usually don't take their child for regular dental check-up and they are not aware of the condition, usually they did not know anything or have any information regarding nursing caries. Inadequate oral health can affect diet and nutrition, potentially leading to growth issues in children. It may also cause speech difficulties, diminished self-esteem, behavioral challenges, learning obstacles and pain-related issues, impacting various aspects of everyday life. Proper knowledge of nursing caries and feeding pattern among mothers and care of newly erupting teeth in very young children may prevent the occurrence of nursing caries. This research paper therefore aims at seeking knowledge about association between breast feeding pattern with nursing caries in young children and prioritize education of mothers regarding feeding pattern to prevent nursing caries in their children.

Material and methods

The present study was undertaken to determine the association between breastfeeding patterns and nursing caries in children. It was a descriptive cross-sectional study conducted among 236 mothers who brought their children, aged between 2-5 years, with nursing caries to the outpatient department of Dhaka Dental College & Hospital, Mirpur, Dhaka. These mothers were randomly selected for the study. The study was conducted over one year, from 1st January 2017 to 31st December 2017. The sample was collected using a purposive sampling technique and a pre-tested semi-structured questionnaire and checklist were prepared at the beginning of the study, considering all objectives and variables. Inclusion Criteria were: (1) Mothers with children Aged between 2-5 years with nursing caries, (2) willingly participant. Exclusion Criteria were: (1) Children Aged below 2 years and above 6 years, (2) Children Who do not have nursing caries, (3) those who are not willing to participate, (4) Mentally retarded children and (5) Severely ill children.

At the beginning of the data collection, permission was obtained from the concerned hospital authority. The purpose of the study was explained in detail to the respondents and data was collected by the researcher through face-to-face interviews with mothers who have a child with nursing caries. Clinical examination of their children was done with the help of clinical examination form after taking consent of the respondents. The data collected from the respondents were checked, cleaned and edited properly before analysis. The statistical analysis was done by computer using Statistical Software Package for Social Science or SPSS version 23. The findings of the study were presented by frequency, percentage in tables and graphs. Mean and standard deviation for continuous variables and frequency distributions for categorical variables were used to describe the characteristics of the total sample. In this study dfs score was categorized by its cumulative percentage. Chi-square test was used to find out any significant relationship between two qualitative variables.

Results

Table-1shows the distribution of the respondents by duration of breast feeding of their child with nursing caries. The mean duration of breast feeding by the respondents was 19.03±7.24 months. Among them 51.3% respondents breast fed their child Up to 24 months, 28.8% respondents done breast feeding for less than 12 months, 16.5% had done breast feeding up to 18 months and 3.4% respondents done breast feeding above 24 months.

Table-1 Distribution of respondents by their duration of breast feeding of their child with nursing caries (n=236)

Duration of breast feeding (in months)	Frequency	Percentage (%)	Mean ± SD
Less than 12 months	68	28.8	19.03±7.24
Up to 18 months	39	16.5	
Up to 24 months	121	51.3	
Above 24 months	8	3.4	
Total	236	100.0	

Table-2 shows the distribution of the respondents by interest of them to breast feeding of their child. Among them 56.4% respondents breast fed their child at will, 43.6% respondents done breast feeding by understanding child's signal.

Table-2 Distribution of respondents by the interest of respondents to breast feed their child (n=236)

Interest of the respondents to breast feed their child	Frequency	Percentage (%)
By understanding child's signal	103	43.60
At will breast feeding by mother	133	56.40
Total	236	100.0

Table-3 shows the distribution of children with nursing caries by their dfs score. The dfs score was categorized according to cumulative percentage. The mean dfs score of the children was found 20.61 ± 5.62. Among them 39.8%

children had a dfs score more than 22, 33.1% children had a dfs score of 0-18, 27.1% children had a dfs score 19-21.

Table-3 Distribution of children with nursing caries by their dfs score (n=236)

dfs score	Frequency	Percentage (%)	Mean ± SD
dfs score 0-18	78	33.1	20.61 ± 5.62
dfs score 19-21	64	27.1	
dfs score more than 22	94	39.8	
Tota l	236	100	

Table-4 Distribution of respondents by their Duration of breast feeding of their child and their child's dfs score (n=236)

Duration of breast feeding by the respondents	Child's df score					
	dfs 0-18		dfs 19-21		dfs more than 22	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
Less than 12 months	23	33.8	23	33.8	22	32.4
Below 18 months	20	51.3	7	17.9	12	30.8
Below 24 months	35	28.9	32	26.4	54	44.6
Above 24 moths	0	0.0	2	25.0	6	75.0
$\chi2 = 14.513$, p=0.024						

Above table shows association between the distribution of the respondents by their duration of breast feeding done by them and their child's dfs score and statistical significance was found.

Table-5 Distribution of respondents by their way of breast feeding of their child and their child's dfs score (n=236)

way of breast feeding by the respondents	Child's dfs score					
	dfs 0-18		dfs 19-21		dfs more than 22	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
By understanding child's signal	50	48.5	20	19.4	33	32.0
At will breast feeding	28	21.1	44	33.1	61	45.9
$\chi2 = 20.056$, p = 0.000						

Above table shows association between the distribution of the respondents by their way of breast feeding of their child and their child's dfs score and statistical significance was found p=0.000.

Discussion

A total of 236 child's mother with nursing caries was taken as respondents for this study and their children where clinically examined. The respondent's children with nursing caries of the present study belonged to 2-5 years group. Almost similar age groups of children were studied by some other studies.[6,12] According to Gruebbel criteria, dfs index is used in this study to record the caries of the children.[13] dfs index was used which is a modified index of dmfs where missing teeth are ignored. In dmfs, d stands for decayed, m for missing teeth and fs for filled surface. dfs was used instead of dmfs because sometimes it is difficult to understand whether the deciduous teeth are congenitally missing or the deciduous teeth was extracted due to caries. The criteria for identifying nursing caries involve finding caries on the labial or lingual surfaces of a minimum of two maxillary incisors, while ensuring that the mandibular incisors remain unaffected by caries.[14,15] The dfs score was categorized according to cumulative percentage. The mean dfs score of the children was found 20.61 ± 5.62. Among them majority of the children had a dfs score more than 22 (39.8%). In a study conducted in Davangere, India, the mean dfs was found in the nursing caries children which was not as high as the present study.[6] It is may be due to presence of high level of fluoride in the water. In another study the mean dfs score was found 22.3 ± 13.4 which is near to the present study result.[12]

The mean breast-feeding duration by the respondents was 19.03 ± 7.24 months. Among them majority of the respondents breast fed their child Up to 24 months (51.3%) and breast fed their child at will (56.4%). Statistical significance was found between the duration of breast feeding and their child's dfs score (p=0.024) and statistical significance was also found with the respondent's way of their child feeding and their child's dfs score (p=0.000) which may be due to presence of milk for longer period in the mouth due to at will breast feeding of their child and we know that there are four factors responsible for the caries process and time is one of them. A Systemic review and meta-analysis reported that breastfeeding up to age 12 months (more versus less breastfeeding), had a reduced risk of caries (OR 0.50; 95%CI 0.25, 0.99, I2 86.8%) and according to seven studies, children who were breastfed for over 12 months faced a higher likelihood of developing caries compared to those breastfed for less than 12 months (OR 1.99; 1.35, 2.95, I2 69.3%). Additionally, among children breastfed for more than 12 months, those who were fed at night or more frequently exhibited an even greater risk of caries (five studies, OR 7.14; 3.14, 16.23, I2 77.1%).[16]

It looks like that at least some of the future interventions to prevent and reduce the damaging sequel of nursing caries should be directed at education of mothers regarding feeding pattern. The education should be given not when the habit of

putting the baby to sleep with the help of breastfeeding or bottle feeding is already established, but before the baby is born. Obviously, education alone may not be enough for prevention; but, if given properly and at right time, it is desirable that it will provide parental guidance before the occurrence of nursing bottle caries.

Limitations of the study

The main limitation of the study is that the study place was selected purposively. So, this sample may not be representing the entire population of Bangladesh. Data was collected by using face to face interview and researcher had to fully depend on the instant opinion of the respondents. As there was no scope of cross checking and re-examining the opinion of the respondents, there may be some scope of bias in the study.

Conclusion

In conclusion, our study shows that occurrence and severity of nursing caries in children is associated with breast feeding pattern. So, more preventive and awareness building program should be arranged regarding nursing caries and feeding pattern starting even before the birth of the child so that mothers can play the main role in preventing nursing caries in their children

Ethical Approval

The study was conducted in accordance with the ethical approval obtained by ethical committee of NIPSOM with Ref no: NIPSOM/IRB/2017/281

References

1. National Institute of Dental, Craniofacial Research (US). Oral health in America: a report of the Surgeon General. US Public Health Service, Department of Health and Human Services; 2000.
2. Hale KJ. Oral health risk assessment timing and establishment of the dental home. Pediatrics. 2003 May 1;111(5 Pt 1):1113-6.
3. Ripa LW. Nursing habits and dental decay in infants:" nursing bottle caries". ASDC Journal of Dentistry for Children. 1978 Jul 1;45(4):274-5.
4. Ripa LW. Nursing caries: a comprehensive review. Pediatr Dent. 1988 Dec 1;10(4):268-82.
5. Milnes AR. Description and epidemiology of nursing caries. Journal of public health dentistry. 1996 Jan;56(1):38-50.
6. Tyagi R. The prevalence of nursing caries in Davangere preschool children and its relationship with feeding practices and socioeconomic status of the family. Journal of Indian Society of Pedodontics and Preventive Dentistry. 2008 Oct 1;26(4):153.
7. Lo GL. The use of comforters and dental caries in the Singaporean preschool children. Singapore Dental Journal. 1985 Jul 1;10(1):21-4.
8. Kaste LM, Marianos D, Chang R, Phipps KR. The assessment of nursing caries and its relationship to high caries in the permanent dentition. Journal of Public Health Dentistry. 1992 Mar;52(2):64-8.
9. Marino RV, Bomze K, Scholl TO, Anhalt H. Nursing bottle caries: characteristics of children at risk. Clinical pediatrics. 1989 Mar;28(3):129-31.
10. Freeman R, Stevens A. Nursing caries and buying time: an emerging theory of prolonged bottle feeding. Community dentistry and oral epidemiology. 2008 Oct;36(5):425-33.
11. Cawson RA, Odell EW. Cawson's essentials of oral pathology and oral medicine e-book. Elsevier Health Sciences; 2017 May 2.
12. 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 journal of dentistry for children. 1997 Mar 1;64(2):112-7.
13. Gruebbel AO. A measurement of dental caries prevalence and treatment service for deciduous teeth. Journal of dental research. 1944 Jun;23(3):163-8.
14. Winter GB, Rule DC, Mailer GP, Gordon PH. The prevalence of dental caries in pre-school children aged 1 to 4 years. Part 1. Aetiological factors. Brit. Dent. J.. 1971;130(7):271-7.
15. Wyne A, Darwish S, Adenubi J, Battata S, Khan N. The prevalence and pattern of nursing caries in Saudi preschool children. International journal of paediatric dentistry. 2001 Sep;11(5):361-4.
16. Tham R, Bowatte G, Dharmage SC, Tan DJ, Lau MX, Dai X, Allen KJ, Lodge CJ. Breastfeeding and the risk of dental caries: a systematic review and meta-analysis. Acta Paediatrica. 2015 Dec; 104:62-84.