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Risk factors of Early Shedding of Deciduous Teeth in Children under Five Years

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Abstract

A descriptive cross-sectional study was undertaken in Shimul Memorial North-South School Laxmipur Branch, Rajshahi. Among the children aged under five years with premature or early tooth loss or shedding. In order to find out the relationship between early shedding of deciduous teeth and selected dental conditions like dental caries, dental trauma, etc., and socioeconomic background.

In this study, out of 110 children, 61 (55.5%) were male, and 49 (44.5%) were female. It was observed that the highest number of children, 109 (99.1%), were Muslim and 1 (0.9%) was Hindu. Among all the parents of children, 6 (5.5%) were educated up to primary level, and 33(30%) were masters and above. Regarding monthly family income, 2 (1.8%) had Tk. 5000-8000 and 15 (13.6%) parents had Tk. 15000-18000. The majority (66.4%) of the children under study were found to clean teeth only once daily. Tooth cleaning by toothbrush & paste and frequency was once daily73 (66.4%). Children liked more sugar-containing food 89 (80.9%) and used to take milk at bedtime (42.7%). The majority of the respondents had intake carbohydrate 91 (82.7%) containing food and the majority of the respondents, 61 (65.5%), had dental caries.

A significant association was found between dental carries and shedding of deciduous teeth, but no association was found between sugar- containing food and shedding of teeth.

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Introduction

Health for all by the year 2000AD is a holistic concept, and its attainment is the central issue and official target of WHO and its member countries WHO recognized oral health as an important dimension of the total health care service, and with due importance in 1994, the slogan by WHO was oral health of for a healthy life. The total number of deciduous teeth is 20 and called milk teeth which are replaced by another set of teeth named permanent teeth. The total member of permanent teeth is 32, which may persist in the mouth until death. Deciduous teeth start to erupt at 6-9 of age. The mandibular incisors appear first, then the maxillary in the mouth.

Shedding of Deciduous teeth began at the age of 6-9 years. Premature or early tooth loss in the primary dentition (deciduous) may be caused by trauma, abscess, caries, tooth attrition, periodontitis, etc. Regardless of the cause,

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premature loss of the teeth results in a loss of structural balance; masticators function good speech and aesthetics.

Due to premature loss of deciduous teeth, the permanent teeth appear in the mouth earlier than the age and cause irregular alignment, crowding in the permanent dentition, which makes permanent damage of the facial look or aesthetics. Many children may have to go through a hazardous number of treatments for the correction of their irregular teeth and need to pay a lot of an orthodontist. A proper study in this respect may be of great value to know the factors associated with dental conditions, the socioeconomic and demographic impact are also to be concerned. Some new initiatives may be triggered in the health sector if the factors can be known as preventive measures.

Children suffer from dental conditions that are dental caries, trauma, dental abscess, tooth attrition, etc. Among them, dental caries is the second most common dental problem in Bangladesh.

Different studies showed that the above-mentioned dental conditions might be associated with different factors like poor socioeconomic conditions, health malpractice, illiteracy, superstition, etc.

Materials and methods

The study was a descriptive type of cross-sectional study. The study was conducted in Shimul Memorial North-South School, Laxmipur branch at Rajshahi. The study was conducted from January 2012 to June 2012. Data were collected over a period of two weeks.

The study population is children under five years of age attending school—a total of 110 children as sample size. The sampling technique is purposive sampling. One questionnaire was prepared for data collection as a data collection tool. Data were collected as an observation checklist.

After collection, data were cleaned, coded, and categorized. Then master tabulation sheet was prepared after proper checking, verifying, and editing as per specific objective and key variables. Data analysis was done by using Statistical Package for Social Science (SPSS) program.

Results

Table-1: Distribution of the respondents by food intake (n=110)

Food	Frequency	Percentage
Carbohydrate	91	82.7
Protein	16	14.5
Fat	03	2.7
Total	110	100.0

Carbohydrate covers the major share of the meal for 91 (82.7%) of the respondents, protein for 16 (14.5%) of the respondents, and fat for 3 (2.7%) of the respondents.

Table-2: Distribution of respondents by sugar intake (n=110)

Intake of Sugar	Frequency	Percentage
More Sugar containing food	89	80.9
Less Sugar containing food	21	19.1
Total	110	100.0

89 (80.9%) of the respondents take More Sugar containing food, and the other 21 (19.1%) take Less Sugar containing food

Table-3: Distribution of the respondents by the fondness of soft drinks of the children (n=110)

Fondness of soft drinks	Frequency	Percentage
Yes	83	75.5
No	27	24.5
Total	110	100.0

Children of 83 (75.5%) respondents are fond of taking soft drinks, and that of 27 (24.5%) respondents are not fond of taking soft drinks.

Table-4: Distribution of the respondents by drinking milk at bedtime (n=110)

Drinking milk at bedtime	Frequency	Percentage
Yes	47	42.7
No	63	57.3
Total	110	100.0

Children of 47 (42.7%) respondents drink milk at bedtime while 63 (57.3%) respondents do not drink milk at bedtime.

Table-5: Distribution of the respondent's monthly family income (n=110)

Monthly Family Income	Frequency	Percentage
5000-8000	02	1.8
8000-12000	40	36.4
12000-15000	53	48.2
15000-18000	15	13.6
Total	110	100.0

Among the respondents, 2 (1.8%) earns 5000-8000 taka per month, 40 (36.4%) earns 8000-12000 taka per month, 53 (48.2%) earns 12000-15000 taka per month, and 15 (13.6%) earns 15000-18000 taka per month

Table-6: Distribution of the respondent's parent's educational level (n=110)

Educational Level	Frequency	Percentage
Primary	06	5.5
SSC	01	0.9
HSC	13	11.8
Graduate	57	51.8
Masters & above	33	30.0
Total	110	100.0

Among the respondents, 6 (5.5%) were educated up to primary level, 1 (0.9%) have passed SSC, 13 (11.8%) have passed HSC, 57 (51.8%) are graduate, and the rest 33 (30%) were masters or above.

Table-7: Distribution of the respondents according to traumatic injury of teeth (n=110)

Traumatic Injury of Teeth	Frequency	Percentage
Yes	22	20.0
No	88	80.0
Total	110	100.0

Baby of 22 (20%) respondents experienced a traumatic injury in the teeth, and that of 88 (80%) respondents do not experience traumatic injury in the teeth.

Table-8: Distribution of the respondents by the mobility of teeth (n=110)

Mobility of Teeth	Frequency	Percentage
Mild	84	76.4
Moderate	22	20.0
Severe	04	3.6
Total	110	100.0

84 (76.4%) of the respondents have mild mobility in teeth, 22 (20%) have moderate and 4 (3.6%) have severe mobility in teeth

Table-9: Distribution of the respondents by the presence of caries (n=110)

Presence of Caries	Frequency	Percent
Present	61	55.5
Absence	49	44.5
Total	110	100.0

Caries present in 61 (55.5%) of the respondents and absent in 49 (44.5%) of the respondents

Table-10: Distribution of the respondents by the presence of gingivitis (n=110)

Gingivitis	Frequency	Percent
Present	12	10.9
Absence	98	89.1
Total	110	100.0

Gingivitis present in 12 (10.9%) of the respondents and absent in 98 (89.1%) of the respondents

Table-11: Distribution of the respondents by the color of the mucous membrane (n=110)

Color of the mucous membrane	Frequency	Percentage
Red	9	8.2
Pink	101	91.8
Total	110	100.0

The mucous membrane of 9 (8.2%) respondents is red, and of 101 (91.8%) respondents, it is pink.

Table- 12: Distribution of the respondents by intake of sugar-containing food vs. shedding of teeth (n=110).

	Sugar Content of food		
	More sugar-containing	Less sugar-containing	Total No. (%)
Shedding of deciduous teeth	63 (70.71%)	07 (33.33%)	70 (63.63%)
Not Shedding of deciduous teeth	26 (29.21%)	14 (66.66%)	40 (36.36%)
Total	89 (100%)	21 (100%)	110 (%)

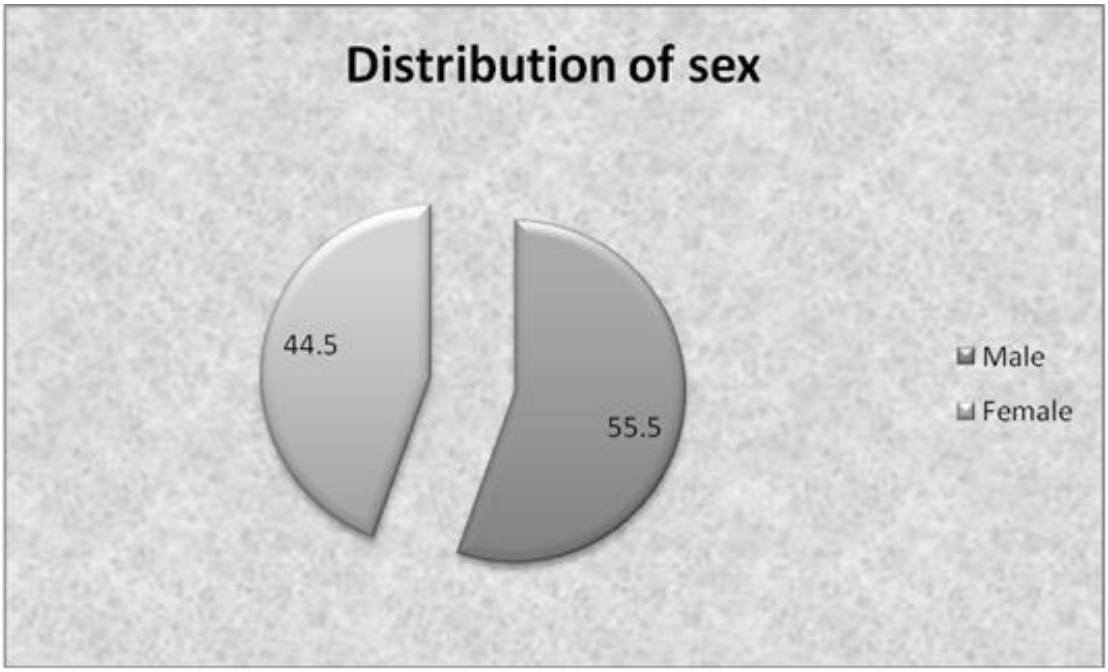
Among all the respondents, 89 intakes of more sugar-containing food. The rest 21 intakes less sugar-containing food. Here the difference between shedding and not shedding of deciduous teeth was not statistically significant by intake more sugar-containing food. [$X^2_{(1)} = 1.47$, $P > 0.05$]

Table-13: Distribution of the respondents by dental caries vs. shedding of teeth.

	Presences of caries		
	Present	Absent	total. (%)
Shedding of deciduous Teeth	55 (90%)	15(30.61%)	70 (63.63%)
Not Shedding of deciduous Teeth	06 (9.8%)	34 (69.38%)	40 (36.36%)
Total	61 (100%)	49 (100%)	110 (100%)

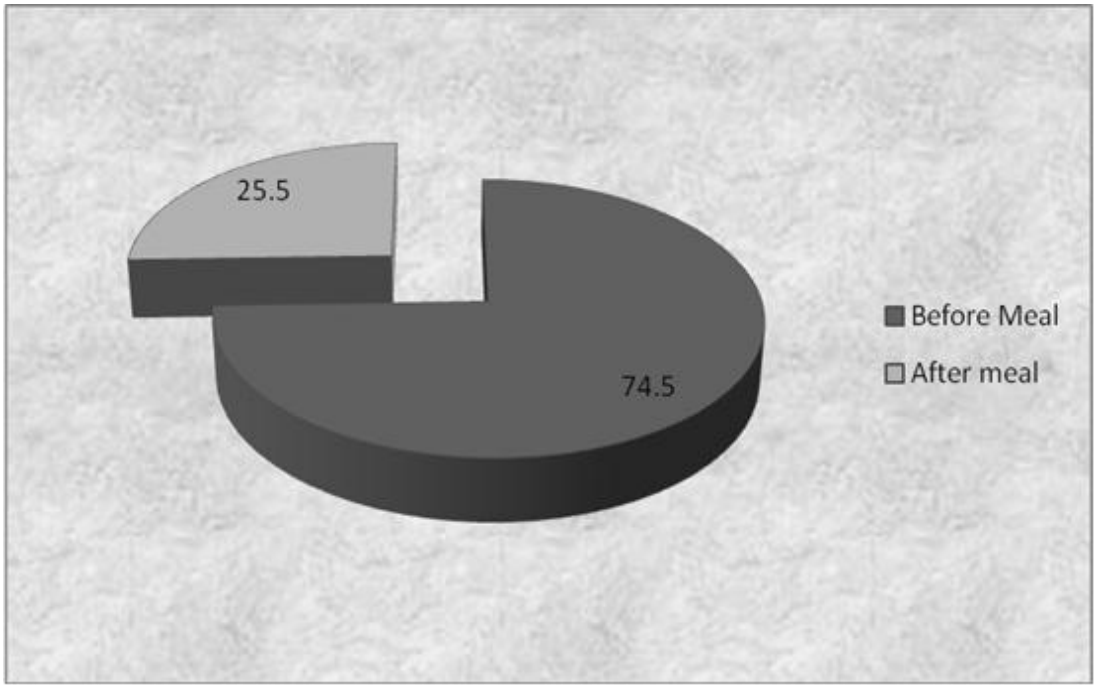
Among all the respondents, 61 had dental caries. The rest 49 had not occurred caries. The difference between shedding and not shedding of deciduous teeth regarding dental caries was statistically significant. [$X^2_{(1)} = 9.51$ $P < 0.05$]

Figure-1: Distribution of the respondents by sex



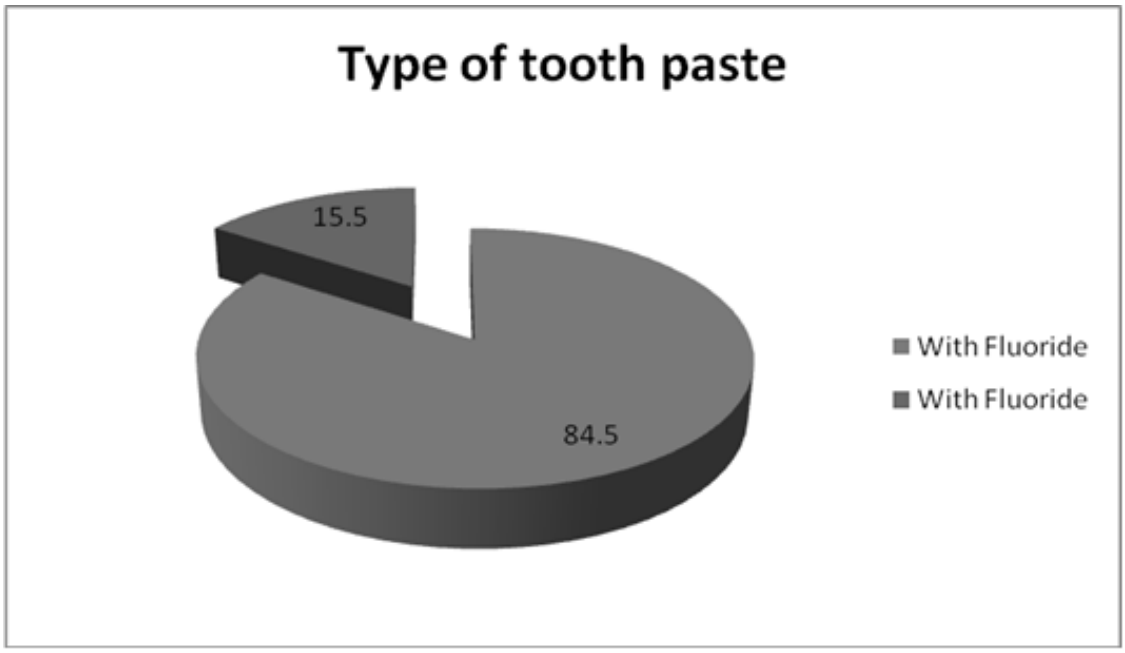
Among the respondents, 61 (55.5%) are male, and 49 (44.5%) are female.

Figure -2: Distribution of the respondents by the timing of brushing



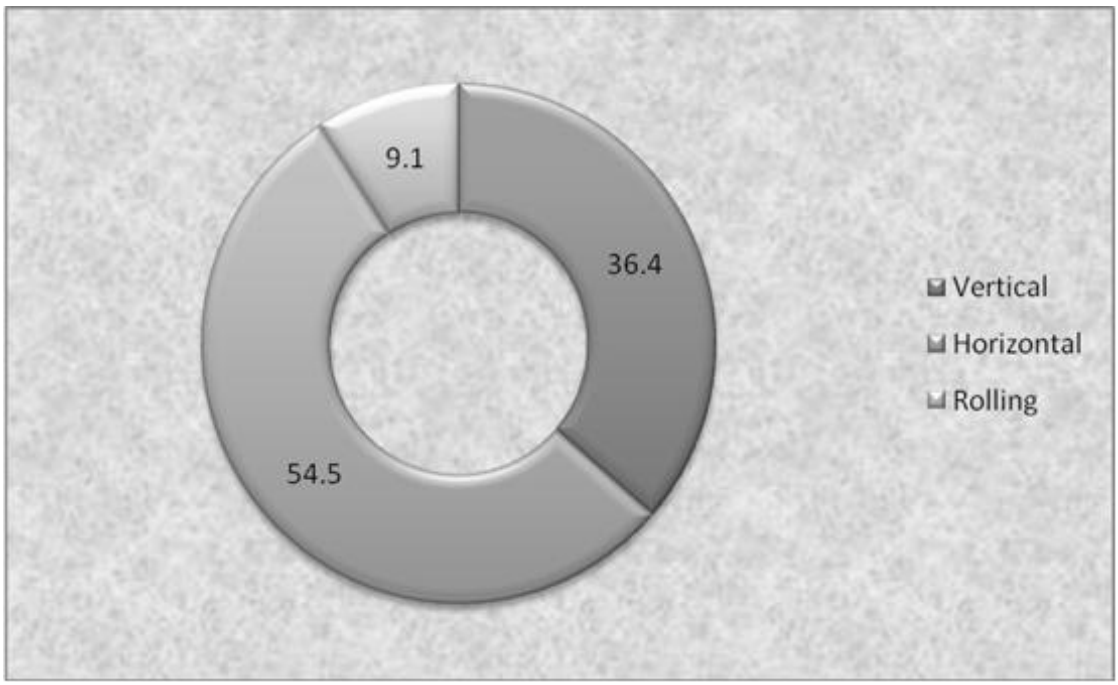
82 (74.5%) of the respondents brush their teeth before a meal, and the other 28 (25.5%) brush their teeth after a meal

Figure-3: Distribution of respondents by use of toothpaste.



93 (84.5%) of the respondents use toothpaste with fluoride, and 17 (15.5%) use toothpaste without fluoride

Figure-4: Distribution of the respondents by the method of tooth brushing.



Among the respondents, 40 (36.4%) brush teeth vertically,60 (54.5%) brush teeth horizontally, and 10 (9.1%) brush teeth by rolling

Discussion

This cross-sectional descriptive study on the early shedding of deciduous teeth was conducted in a private kindergarten school Laxmipur, Rajshahi. A total of 110 children were examined clinically, and their parents were interviewed with the view to find out the conditions of deciduous teeth and to identify the reasons for the early shedding of deciduous teeth of children under five years of age.

Out of 110 children, females 49 (44.5%) were dominated by males 61 (55.5%) [Figure -1] This finding reflects that male child are more prone to develop dental diseases and also male is more accessible to health care facilities than female children. The study identified that majority of children, 44 (40%), belonged to the age group of 55-60 months. Rafiqullah stated that the premature shedding of deciduous teeth increases with the increase of age. This finding is similar to the study regarding the rate of early shedding as increased with the increase of age.[4]

The majority of the respondents were 109 (99.1%), were Muslim by religion, and maximum children 91 (82.7%), take carbohydrate daily. Among them, 109 (99.1%) children were presented were with deciduous teeth. According to the observation, 84 (76.4%) had mild mobility in teeth [Table-8], 22 (20%) had moderate, and 4 (3.6%) had severe mobility. Out of 110 respondents, 61 (53.8%) had caries. Gingivitis was found in only 12 (10.9%) respondents [Table-10], and 98 (89.1%) had no gingivitis. Among all the respondents, 101 (91.81%) children had abnormal mucus membrane (Pink color) [Table-11]

The study reveals that maximum cases, 89 (80.9%), of shedding tooth were related to more sugar-containing food intake. Chocolate, chewing habit, soft drinks, and drinking milk at bet time habit among children also identified the more chance of early loss of deciduous teeth. (Table-3 and 4) Bhuiyan A.M stated that the prevalence of the oral disease is related to socioeconomic environment and food habits in the community. Rafiqullah et al. found that refined carbohydrate, e.g., sugar, while flower, etc. causes caries and ultimately causes tooth loss.5 The findings of the study showed similar facts that sweet, sugar, etc., are more distributed in the table. These sugar-containing food cause early shedding of teeth.

Study findings also reflect the possible dental conditions related to shedding of deciduous teeth due to dental caries 61 (55.5%) [Table-9] caries and traumatic injury 22(20%) (Table-7). Awal M A et al. showed that 70.40% early shedding of deciduous teeth was due to dental caries.6 The result of this study is very similar to Awal MA et al. study results because both the studies were done in Bangladesh with almost similar socioeconomic backgrounds. Torquil Maccphee stated that 40% extraction of tooth done due to dental caries. The statement of Maccphee was different because the study was done in the USA with different socioeconomic backgrounds.

The study reveals that 6 (5.5%) [Table-6] parents were primary level educated, and 33 (33%) parents were educated up to master degree 33 (30%). As illiterate people are not conscious about oral health practice, so they don't clean their teeth and suffer from various dental conditions.

The study showed that parents were earning per month and minimum 5000-8000 taka (1.8%) above 15000-18000 [15] (13.6%) were earning and above Rafiqullah et al. showed that economic insolvency is a responsible factor for tooth missing. The study also showed that the incident is high in the low-income group.

Tooth cleaning practice of the children found that those who did not clean teeth daily 73 (66.4%) had more incidences of premature tooth loss than among children who cleaned their teeth with toothbrush & paste. Jalil K A stated that a correct toothbrush with paste would reduce dental diseases. This study revealed that the majority of the children, 73 (66.4%), brush once daily, which means similarity between the two studies.[7]

It is evident from the overall study findings that socioeconomic conditions, educational status, and oral health practice play an active role in the early shedding of a deciduous tooth. Also, dental caries have been identifying as the most frequent dental

condition or cause of the early shedding of deciduous teeth.

A significant association was found between dental carries vs. shedding of deciduous teeth. ($x2$ (1) = 9.51, $p<.05$).

But no association was found between sugar-containing food vs. shedding of teeth. ($x2$ (1) = 1.47, $p>0.05$).

Conclusion

The majority of the children were Muslims, and some cases were Hindus. The majority of the respondent's parents were graduates and above by educational qualification. Merely half of the respondents had total monthly family income by taka 12000-15000.

The study reflects food habits with early shedding. Sweets and sweet foods, chocolate is associated with the early loss of deciduous teeth. The habit of bedtime milk drink is also associated with early deciduous teeth.

The study found that oral hygiene practice is important in regards to the early shedding of deciduous teeth because those who did not clean their teeth daily properly had more incidence of early shedding. The incidence was less among the children who cleaned their teeth regularly.

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