

# A study on Periodontitis and its relation with nutritional status among the high school going girls

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## Abstract:

*A descriptive type of cross sectional study was carried out to assess the prevalence of periodontal diseases among high school going adolescent girls and to find out their nutritional status. The aim of the study was also to find out the relationship between periodontal diseases and nutritional status among high school girls.*

*Oral examination was done to identify periodontal diseases for a sample of 222 high school girls between 10 and 17 years of age. They were also interviewed through a structured questionnaire for collecting other relevant information.*

*Result show that mean age of the study girls was 13.15±1.42 years, with 46% in the age group of 12 to 13 years, and about 47% of them were from poor families with monthly family income of <Tk 4000. In this study periodontitis were found among 22.1 percent girls.*

*Nutritional status according to BMI, 56.3 percent subjects were malnourished suffering from chronic energy deficiency, while according to Z-score 5.9 percent were underweight and 18.5 percent girls were stunted. Family income was found to be significantly associated with periodontitis. Periodontitis were found to be increased with the increase of age as well as with the increase in family income. On the other hand, periodontitis decreased with the increase in the number of tooth brushing.*

*Since dental plaque causes gingivitis and may later develop periodontitis. So control of microbial plaque accumulation is the means by which preventive program can be made effective. Efficient tooth cleaning irrespective of method used has been demonstrated repeatedly to important in maintaining periodontal health and reducing dental disease prevalence. It would appear that efficiency rather than the frequency of brushing is more important in removing plaque.*

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## Introduction:

Periodontal disease has been reported to be one of the most prevalent diseases worldwide<sup>1</sup>. According to a recent CDC report, nearly one-half of adults aged 30 yr. had signs of periodontal disease in the United States<sup>2</sup> and a majority of children and adolescents had some form of gingivitis, which may initiate severe periodontal diseases<sup>3</sup>. Dental diseases are getting more prevalent among the population of Bangladesh. After liberation the prevalence of Periodontal diseases have been increasing day by day. It was observed that in Bangladesh the number of dental patients have been increased in the Govt. hospitals & private dental clinics<sup>4</sup>.

In Bangladesh, gingivitis is most common and periodontal diseases are the most common factors for tooth extraction. In rural areas periodontal diseases have been responsible for the majority of extractions. This assumption is based on the number of patients attending the outpatient departments of government hospitals and private dental clinics. The increased number of dental patients may be due to the lack of awareness of the necessity of dental health and care. Children and adolescents are vulnerable to periodontal diseases.

Descriptive epidemiological studies have been shown periodontal disease to be more prevalent in blacks than white in rural than urban in habitants, poorly educated than in the well-educated, in the poor than in the wealthy, in man than in women & in persons with poor oral hygiene<sup>5</sup>.

A number of epidemiological studies indicate that the periodontal disease is more prevalent & severe in the area of India & Sri-Lanka<sup>6</sup>. The general impression from current literature remains that exceptionally insufficient oral hygiene measures appear to constitute the main reason

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for higher prevalence & severity of periodontal in India, Bangladesh geographically being the part of India & politically independent country, is a land with 140 million of its population & one of the under developed countries of the world. About 90% of its population is the inhabitants of rural areas where they received very minimum health service facilities more especially they are quite ignorant about oral hygiene. It has been observed that the prevalence & severity of periodontal disease has been increasing anxiously higher among this population than the urban.

Multiple factors, are proposed as a cause of the periodontal disease, poor oral hygiene malposition of tooth, restoration, host defence, smoking. Nutritional status is also linked to immune response. When a periodontal infection is present the ability of oral tissues to utilize nutrients is altered, thus interfering with the body's normal ability to heal itself.

About 12% of the whole population is adolescent girls in Bangladesh<sup>6</sup> and 22.6 per cent of the girls suffer from severe malnutrition (Parveen, 1994). A large number of adolescent girls suffer from various degrees of nutritional disorders that result from inadequate or inappropriate intake of specific nutrients<sup>7</sup>. So it is thought that the prevalence of dental diseases and nutritional status of the adolescent high school girl is needed to be studied, so that an appropriate measure can be recommended for main family oral health.

#### Materials and methods:

The study was carried in high school going girls attending in Kuliarchar pilot girls high school, Kishorgonj. Purposive sample & the number of subjects were 222. The school going girls were interviewed for the information necessary according to the questionnaire. On an average of 20 - 22 girls were interviewed during working hours of assigned working class. Study period was 2003-2004.

Examination of oral cavity & teeth of high school going girls were done by using a probe & mirror in the day light where the patients sat on an ordinary wooden chair, clinical evaluation were made for periodontitis, including methods of maintaining oral health. Nutritional status of the girls were obtained by measuring anthropometry (BMI, MAC.).

After completion of necessary coding and editing data were computed and analysis was done by using SPSS software package. Appropriate statistical tests were done to find out the significance of the results.

**Table-I**  
*Age distribution of the subjects*

Age in year	Frequency	Percent
10-11	30	13.5
12-13	102	46.0
14-15	84	37.8
16-17	6	2.7
Total	222	100.0

Average age = 13.15 ± 1.42

Table-I shows that majority of the patients are between 12 and 15 years of age. with highest number in the age group of 12 - 13 years (46.0%) followed by the age group of 14 - 15 years (37.8%).

**Table-II**  
*Cross classification between Income and Periodontitis*

Income	Periodontitis					
	Yes		No		Total	
	No.	%	No.	%	No.	%
Tk. <4000	8	3.60	97	43.70	105	47.3
Tk. >4000	41	18.47	76	34.23	117	52.7
Total	49	22.07	173	77.93	222	100.0

Chi-square = 6.95 P=0.01 OR = 5.39 RR=1.13

Table-II shows that only 22.07% of the subjects had periodontitis of whom 18.47% were from higher income group (Tk>4000), while 77.93% had no calculus where equal proportion of the subject were from both low and high income groups.

**Table-III**  
*Association between nutritional status and Periodontitis*

BMI	Periodontitis					
	Yes		No		Total	
	No.	%	No.	%	No.	%
Malnourished	11	5.0	114	51.4	125	56.3
Not Malnourished	8	3.6	89	40.1	97	43.7
Total	19	8.6	203	91.4	222	100.0

Chi-square = 0.01 P=0.92 OR = 0.93 RR = 0.99

Table-III based on chi-square test it was found that income and periodontitis was significantly associated (chi-square 0.01, p=0.92). Odds ratio (OR=0.93) showed that exposure (Income <4000) was positively associated with periodontitis.

#### Discussion:

The prevalence of periodontitis is high in Bangladesh and is being raising with time. Different studies have reported

a prevalence of deep pocket in 35 - 44 years old ranging between 14-65 per cent. Bangladesh is still among the 33% countries of the world with the worst periodontal conditions<sup>13</sup>. In this present study the prevalence of periodontitis was found 22 percent. In a study Mahmood J.U. found that 51 percent of female subject has periodontitis which is also higher than our study<sup>14</sup>.

Another study shows, that among 500 patients 112 persons (22.4%) had periodontitis with varying degree of pocket depth which is about similar to our study.<sup>15</sup>

More than half of the study population was found malnourished. According to BMI 56.3% subjects were malnourished as they had BMI < 18.5, whereas subjects with normal nutritional status (BMI 18.5 - 24.99) were 41.9 percent. In a study among the family members of Bangladesh marginal peasants showed that 38.8 percent of adolescent girls were malnourished as their BMI was less than 18.5 percent. Regarding weight for age 5.9% were found under weight according while to the height for age 18.5 percent were stunted.

In respect of mid arm circumference (MAC) 54.5% were malnourished (MAC <22), while 45.5% were normal (MAC >22).

The present study shows that age and disease has a close relationship. It shows that disease tend to increase with increase in age. Based on chi-square test it was found that income and periodotitis was significantly associated. This study has described and summarized the evidence regarding the association between nutritional status and periodontal health status in school going girls. However, the causal relation between anthropometric measurements (nutritional status) and periodontal diseases in school going girls remains unknown and has become an emerging public concern. There is a strong need for conducting a more careful longitudinal study.

### References:

1. World Health Organization [Internet]. Oral Health Fact sheets. 2012. [cited 2015 Jan 20]. Available from: <http://www.who.int/mediacentre/factsheets/fs318/en/>.
2. Centers for Disease Control and Prevention [Internet]. Periodontal Disease. [cited 2015 Jan 20]. Available from: [http://www.cdc.gov/oralhealth/periodontal\\_disease/index.htm](http://www.cdc.gov/oralhealth/periodontal_disease/index.htm).
3. Petersen PE. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century—The approach of the WHO Global Oral Health Programme. *Community Dent Oral Epidemiol* 2003;31 Suppl. 1:3–23.
4. Bhuiyan, A..M. Prevalence of dental disease in Bangladesh. *Bangladesh Dental Journal*, vol. 5; no. 1: 1988 - 89; p 6 - 9.
5. WHO Epidemiology, aetiology and prevention of periodontal diseases. Report of WHO Scientific group. Technical report series 621 Geneva WHO 1978.
6. Salam, A. Hossain, D. Kamal, K. Islam, T. Hossain, S. Bhuiyan, H.H., Islam, A.R. & Chowdhury M. R. & Hoque, Z. 1991; Statistical Year Book at Bangladesh. Bangladesh Bureau of Statistics (BBS); 12 edition.
7. Mannan, M.A., and Akhter, S., (1993, Nov. 27 - 29). Dietary intake of children & mothers in Bangladesh. Abstract - 6<sup>th</sup> Bangladesh Nutrition Conference, p 36.
8. Sattar, K.Z., Role of dental plaque in the initiation of chronic periodontal diseases; *Bangladesh Dental Journal*: vol. 3: no. 1, 1984 -85, p 22-25.
9. Ahmed R, et. al. Nutritional status of school going children in Bangladesh - A case study in Dhaka city. *Dhaka Shishu (Child) Hospital Journal*, vol. 6, 1990, no. 1: 8 - 13.
10. Christakis G.E. (1973). Nutritional Assessment in health programs *Am J. of public health*; 63: p-11
11. Institute of Nutrition and Food Science, 1983, University of Dhaka. *Nutrition Survey of Rural Bangladesh*; 1981 - 82.
12. Khandker M.M.H. Prevalence of Gingivitis and its Relationship with Oral Hygiene. *Bangladesh Dental Journal*, vol. 12; no. 1: 1996; p 60 -65.
13. Alam K.M.: A sample survey of prevalence with oral hygiene among school & college going boys & girls *BDJ* 1991 - 92, 8:17-21.
14. Mahmood, J.U. Epidemiology of Gingivitis and Periodontitis Among People in Shibalay Village under Manikganj District. *Bangladesh Dental Journal*, vol. 5; no. 1: 1988 - 89; p 19 - 21.
15. Joarder M.A.K. et al. Relation of chronic inflammatory periodontal disease (CIPD) severity with oral hygiene status and self cleaning habits; *Bangladesh Dental Journal*, vol. 13, no. 1; 1997: p 1 - 8.