

Dentition and Oral Health Status in Children and Adolescents with Type 1 Diabetes Mellitus

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Abstract :

The descriptive type of cross-sectional study was conducted to find out the status of dentition and oral health in children and adolescents with type-1 DM in BIRDEM, Dhaka, from 1st January to 30th June 2010. Fifty two (52) samples of 5 to 19 years of age were studied to check their oral health problems. Results showed 35(67.3%) of respondents were suffering from gingivitis and dental caries, 13(25%) respondents had periodontitis and 4(7.7%) respondents had attrition and mobility. Overall prevalence of oral health problems were more in male (53.8%) than female respondents (46.2%). The Highest number (57.7%) of oral health problems occurred in 16~19 years age group (mean age 15.29±3.35years). Majority (53.8%) of the respondents did not check their blood glucose level regularly and 76.9% respondents visit dental surgeon when needed. Three fourth (75%) of the respondents brush their teeth before breakfast and 92.3% respondents used to clean their teeth only once a day. With type 1 DM, maximum respondents have ulceration of oral mucosa (76.9%) and only 5.8% respondents have normal oral mucosa. Three fourth (73.1%) of the respondents had unhealthy tonsils and maximum (57.7%) respondents had ulceration of tongue. Near about half of the respondents (48.1%) had good oral health status among children and adolescents with type 1 DM.

Key words: Oral health status, children, adolescents, type1 diabetes mellitus.

Introduction :

Diabetes mellitus is a metabolic disease leading to abnormal fat, carbohydrate and protein metabolism.^{1,7} Two basic types of primary diabetes mellitus have been described. Insulin-dependent diabetes mellitus (IDDM: type1) and non-insulin-dependent diabetes mellitus (NIDDM: type-II).¹ The prevalence of type 1 DM exhibits a wide range as great as 20-60 times in, separate geographic population.² According to data of World Health Organization (WHO) DIAMOND project group, while the incidence of type 1 DM was low in Asia and South America, it was high in Europe.² In addition, the incidence rate is

currently increasing in Asia and Europe.² The main complication of DM affect the organs and tissues rich in capillary vessels, such as the kidney, retina and nerves.⁷ These complications are secondary to the development of micro-angiopathy.^{2,7} Similar changes in small vessels can be found in the oral tissues.^{3,4} Periodontal disease has also been recognized as the sixth leading complication of diabetes. All of these long term consequences have been widely studied in recent years and this has lead to improvements in diseases prevention and effective therapy, giving patients with diabetes a better quality of life.⁵

Like other developing country dental problems are a public health problem in Bangladesh. A number of oral disease and disorders have been associated with DM and periodontal disease has been identified as a possible risk factor for poor metabolic control in subjects with diabetes.⁶ Therefore, the status of these dental diseases need to be identified by valid studies to assess the actual distribution of the problem in the community. In addition to gingivitis and periodontitis, dental caries, delayed eruption and shedding, salivary dysfunction, oral mucosal disease, oral infection such as candidiasis, taste and neurosensory disorders are associated with type 1 DM.⁷ Type 1 DM is a chronic systemic metabolic disease characterized by an absolute insulin deficient production by the pancreatic beta-cells. This disorder affects mainly children and adolescents.^{5,8,9} Although these patients are oriented to follow a diet with restricted consumption of sucrose (the most cariogenic content of sugars), the lack of knowledge of good oral health habits can lead to poor glycemic control and the onset of morbidities related to oral health.⁸ So, ultimate target of the researcher is to identify the dentition and oral health status and to identify the changes on dentition in children and adolescents with type 1 DM. Generated information from this study may be of immense benefit for the policy planners of the country to implement necessary intervention to fight against the common oral health problems of the country.

Methodology:

It is a descriptive type of cross-sectional study to see the dentition and oral health status in children and adolescents with type 1 DM. Children and adolescent patients with type 1 DM who were attending the outpatient department (OPD) of Dental Unit at BIRDEM, Shahbagh, Dhaka. Purposively the Author took her own place and selected 52 patients in OPD of the Dental Unit of BIRDEM, Dhaka. OPD registered patients came to the department to receive treatment. At that time, the Author sought help from the attending doctor for taking interview of the patients and also for clinical examinations. The respondents were taken each by each for interview and examination according to the serial number of the OPD register. A structured questionnaire and a check list were developed keeping the objectives and variables to be studied in the mind at the beginning of the study. The questionnaire was three parts consisting of part-1) general information with socio-demographic characteristics, part-2) dentition and oral health status of the respondents and part-3) observation check list.

The data was collected by self-administered using structured questionnaire with a check list through direct interview and by clinical examination of the respondents after obtaining verbal consent. The examination of the oral cavity and teeth of the respondents were performed under good illumination with the help of dental probe and mirror in the department where the patient sat on a dental chair. Clinical evaluations were made for over all oral health conditions, e.g., gingivitis, periodontitis, dental caries, attrition, tonsillitis, etc. The data was collected, checked, verified and only the fully completed questionnaire was recorded in the computer for final analysis. The analysis was carried out with the help of the software program Statistical Package for Social Science (SPSS) version 17 and based on the key variables; statistical significance was done following the objectives of the study.

Results :

Table - 1 : Distribution of the diseases of the respondents.

[n=52]

Diseases	Frequency	Percent
Gingivitis and Dental caries	35	67.3
Periodontitis	13	25.0
Attrition and mobility	4	7.7
Total	52	100.0

Table-1 delineates that 67.3% respondents were suffering from gingivitis and dental caries, whereas, 25% had periodontitis and 7.7% had attrition and mobility on teeth.

Table -2: Distribution of the respondents by age and diseases.

[n=52]

Age Group	Diseases of the respondents						Total Percentage
	Gingivitis and dental caries		Periodontitis		Attrition and mobility		
	No.	%	No.	%	No.	%	
5 - 10	5	9.6	2	3.9	1	1.9	8 15.4
11 - 15	13	25.0	5	9.6	1	1.9	19 36.5
16 - 19	17	32.7	6	11.5	2	3.9	25 48.1
Total	35	67.3	13	25.0	4	7.7	52 100

Out of 52 respondents, 67.3% respondents suffered from gingivitis and dental caries, 25% suffered from periodontitis and rest 7.7% respondents suffered from attrition and mobility (Table-2). In 16-19 years age group, a considerable number (32.7%) of respondents suffered from gingivitis (Table-2).

Table -3: Distribution of the respondents by regular check up of the blood glucose level.

[n=52]		
Regular check up	Frequency	Percent
yes	8	15.4
no	28	53.8
when needed	16	30.8
Total	52	100.0

Table-3 shows that 53.8% respondents did not check their blood glucose level regularly. Among the rests, 30.8% respondents checked their blood glucose level when needed and only 15.4% respondents checked their blood glucose level regularly.

Fig.1: Distribution of the respondents by condition of the oral mucosa.

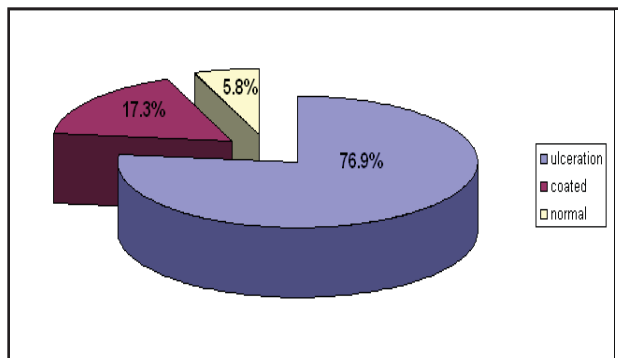


Fig.1 shows that 76.9% respondents had ulceration of the oral mucosa. Among the rests, 17.3% respondents had coated oral mucosa and only 5.8% respondents had normal oral mucosa.

Discussion :

The study on dentition and oral health status in children and adolescents with type 1 DM was carried out among the 52 respondents in the OPD of dental unit at BIRDEM, Shahbagh, Dhaka. The objective of the study was to find out the dentition and oral health problems of the patients attending a hospital that may provide preventive measures to the patients. The occurrence of gingivitis and dental caries, periodontitis and attrition and mobility were found 67.3%, 25.0% and 7.7%, respectively. These data could not compare with any national figure due to unavailability of literature. Children with diabetes endure many problems during the course of their lives where the dentition and oral health problems are very common. In this study, the effects of diabetes on dentition and oral health were evaluated by using clinical findings.

However, it has been shown that diseases containing metabolic instabilities like diabetes weaken the resistance to inflammation in individuals.⁹ It has been suggested that salivary secretion rates may be significantly reduced in children with type 1 DM when compared to healthy children. Reduced salivary secretion increases the likelihood of caries.⁸⁻¹⁰ Patients should also learn how to brush their teeth correctly at least twice a day and how to use dental floss and sometimes chlorhexidine digluconate 0.2% as an antiplaque agent. In summary, the results suggest that type 1 DM plays a significant role for dentition and oral health in children and adolescents. The children with type 1 DM are more likely to experience infections in connective tissues than children without type 1 DM.³ This is due to the fact that for children with type 1 DM, infection leads to loss of teeth. However, in children without type 1 DM, the teeth were more likely to remain viable. The Pediatricians' concern is to maintain good metabolic control and to make diabetic patients aware of a diet that suits their unique nutritional needs. The obligation of the dentist to the patient is to evaluate and help maintain good oral hygiene.¹⁰

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