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Assessment Of Cases Of Type I Diabetes And Oral Health Status In Children- A Clinical Study

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ABSTRACT
Background: Diabetes mellitus (DM) is a chronic systemic metabolic disease characterized by abnormally high blood glucose levels. The present study was conducted to assess cases of type I diabetes mellitus and oral health status in children.
Materials & Methods: 82 children age ranged 8-16 years of both genders were selected. Diagnosis of dental caries decayed, missing, and filled surfaces/decayed and filled surfaces was done. Blood samples were collected and HbA1c values measured.

Results: There were 14 controlled diabetics and 68 uncontrolled diabetics. The mean dfs score in diabetics was 0.612 and in uncontrolled diabetics was 0.431, mean plaque score was 0.71 and 0.89 in controlled and uncontrolled diabetics and mean gingival score was 0.056 and 0.215 in controlled and uncontrolled diabetics. The difference was non-significant (P> 0.05).

Conclusion: No difference in dfs score, plaque score and gingival score in controlled and uncontrolled diabetics was observed.

Key words: Diabetes, plaque score and gingival score

1. INTRODUCTION

Diabetes mellitus (DM) is a chronic systemic metabolic disease characterized by abnormally high blood glucose levels. The International Diabetes Federation (IDF) estimates the total

number of diabetic participants to be around 40.9 million in India, and this is further set to rise to 69.9 million by the year 2025.[1]

The onset of type 1 DM occurs predominantly in childhood, with median age of 7–15 years, but may present at any age.[2] Oral manifestations of diabetes are mainly related to fluid imbalance, an altered response to infection, possible increased glucose concentrations in saliva, and microvascular changes. Studies have shown high ratio of gingival inflammation and periodontal diseases with subsequent loss of teeth in diabetic patients, and the degree of inflammation and caries incidence depends on the metabolic control.[3]

Historically, type 1 diabetes was largely considered a disorder in children and adolescents, but this opinion has changed over the past decade, so that age at symptomatic onset is no longer a restricting factor.[4] Polydipsia, polyphagia, and polyuria (the classic trio of symptoms associated with disease onset) along with overt hyperglycaemia remain diagnostic hallmarks in children and adolescents, and to a lesser extent in adults. An immediate need for exogenous insulin replacement is also a hallmark of type 1 diabetes, for which lifetime treatment is needed.[5] The present study was conducted to assess cases of type I diabetes mellitus in children.

2. MATERIALS & METHODS

The present study was conducted among 82 children age ranged 8-16 years of both genders. The consent from parents was obtained.

A thorough clinical examination was performed with under natural light, mouth mirror, CPITNC probe, two-tone plaque disclosing agents, and applicator tips. DMFS index was recorded based on The WHO 1997 Oral Health Survey criteria for diagnosis of dental caries decayed, missing, and filled surfaces/decayed and filled surfaces. Blood samples were collected and HbA1c values measured (turbidimetric immunoassay method) were recorded and classified as controlled and uncontrolled diabetics. Decayed and filled surface, plaque, and gingival scores was recorded. The data were subjected to statistical analysis. P value less than 0.05 was considered significant.

3. RESULTS

Table I Distribution of patients

Total- 82		
Gender	**Boys**	**Girls**
Number	52	30

Table I shows that out of 82 girls, boys were 52 and girls were 30.

Table II Distribution of diabetics

Diabetics	**Number**	**P value**
Controlled	14	0.01
Uncontrolled	68	

Table II, graph I shows that there were 14 controlled diabetics and 68 uncontrolled diabetics.

Graph I Distribution of diabetics

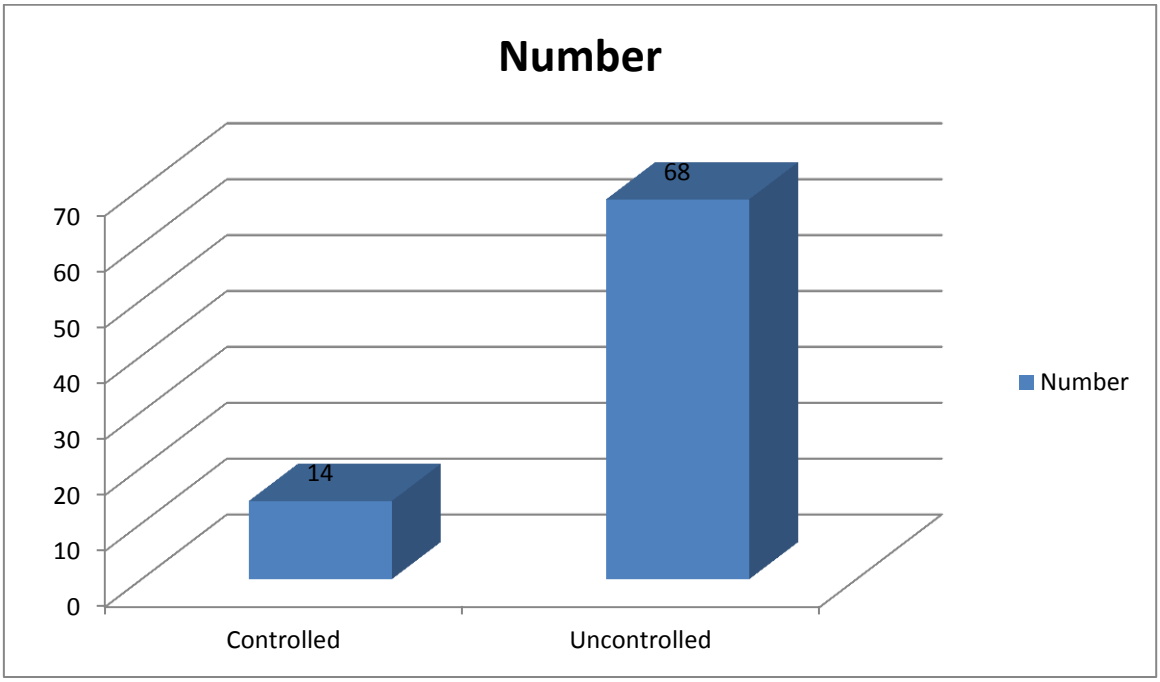
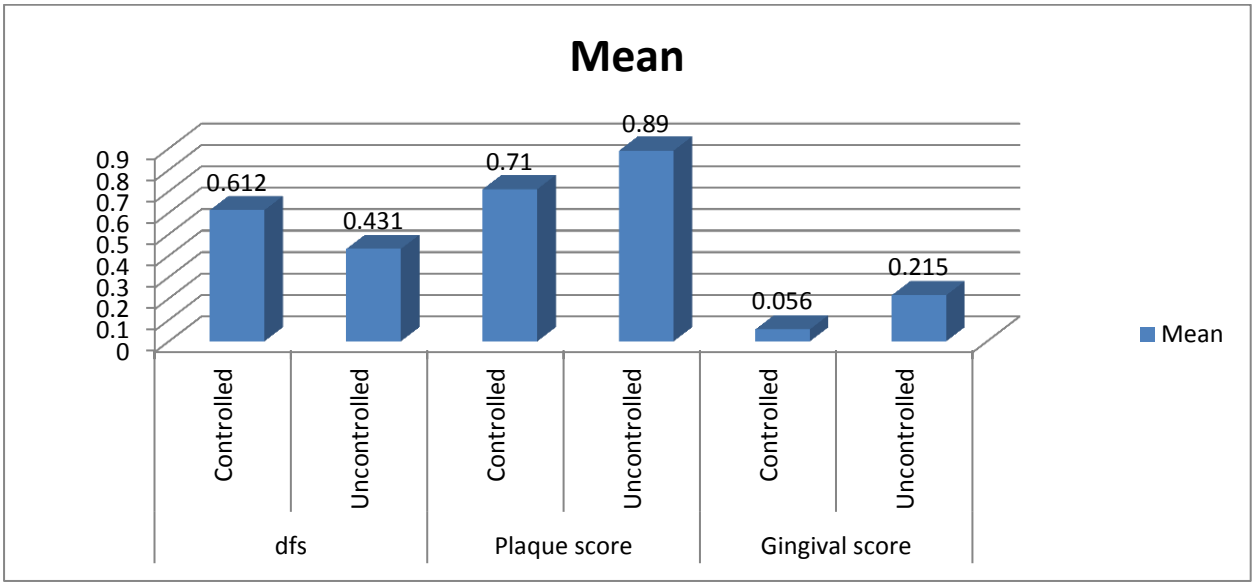


Table III Distribution of decayed and filled surface, plaque, and gingival scores

Variables	Diabetics	Mean	P value
dfs	Controlled	0.612	0.12
	Uncontrolled	0.431	
Plaque score	Controlled	0.71	0.09
	Uncontrolled	0.89	
Gingival score	Controlled	0.056	0.18
	Uncontrolled	0.215	

Table III, graph II shows that mean dfs score in diabetics was 0.612 and in uncontrolled diabetics was 0.431, mean plaque score was 0.71 and 0.89 in controlled and uncontrolled diabetics and mean gingival score was 0.056 and 0.215 in controlled and uncontrolled diabetics. The difference was non- significant (P> 0.05).

Graph II Decayed and filled surface, plaque, and gingival scores



4. DISCUSSION

Although type 1 diabetes can be diagnosed at any age, it is one of the most common chronic diseases of childhood.[6] Peaks in presentation occur between 5–7 years of age and at or near puberty. Whereas most autoimmune disorders disproportionately affect women, type 1 diabetes is slightly more common in boys and men. The incidence of type 1 diabetes varies with seasonal changes and birth month.[7] More cases are diagnosed in autumn and winter, and being born in the spring is associated with a higher chance of having type 1 diabetes. Development of type 1 diabetes-associated autoimmunity (ie, formation of islet autoantibodies) in the months or years before onset of symptomatic type 1 diabetes also shows some seasonal synchronisation.[8] These concepts support a theoretical role for an environ mental agent initiating or driving the pathogenic processes in type 1 diabetes. Diagnosis of diabetes has historically included fasting blood glucose higher than 7 mmol/L (126 mg/dL), any blood glucose of 11·1 mmol/L (200 mg/dL) or higher with symptoms of hyperglycaemia, or an abnormal 2 horal glucose-tolerance test.[34] In 2009, the American Diabetes Association modified their guidelines for diabetes diagnosis to include glycated haemoglobin 6·5% or higher.[9] The present study was conducted to assess cases of type I diabetes mellitus in children.

We found that out of 82 girls, boys were 52 and girls were 30. There were 14 controlled diabetics and 68 uncontrolled diabetics. Vidya et al[10] evaluated the relationship between oral health status and the level of glycemic control in type 1 diabetes patients. The study was carried out in 87 children with type 1 diabetes, aged 8–16 years, attending a diabetes specialty hospital. Results showed a significant difference in decayed, missing, and filled surface component ($P = 0.043$) and gingival index scores ($P< 0.001$) in the permanent dentition between controlled and uncontrolled groups but not in case of the primary dentition.

We found that mean dfs score in diabetics was 0.612 and in uncontrolled diabetics was 0.431, mean plaque score was 0.71 and 0.89 in controlled and uncontrolled diabetics and mean gingival score was 0.056 and 0.215 in controlled and uncontrolled diabetics. High values of HbA1c, especially in the long run, indicate that the participants concerned have had periods of hyperglycemia during which salivary flow may have decreased, and salivary glucose

concentrations may have risen, thereby increasing their caries risk. Furthermore, the role of behavior should not be forgotten because poor control may be a result of negligence in relation to diabetes care and treatment regimens, and such participants may be liable to be careless about their dental health and dental care as well. High salivary or gingival fluid glucose concentrations and decreased salivary flow rates have been reported especially if diabetes is poorly controlled.[11]

Most cases of type 1 diabetes represent an immune, if not autoimmune-mediated disorder, meaning patients often show features of an immunological contribution to disease pathogenesis (eg, autoantibodies or genetic associations with genes controlling immune responses). However, not all patients with type 1 diabetes have these characteristics, leading to proposed classifications of type 1A (autoimmune) diabetes, for the 70–90% of patients with type 1 disease that have immunological, self-reactive autoantibodies, and type 1B (idiopathic) diabetes, representing the remainder whose specific pathogenesis remains unclear. A subset of individuals within this latter group have monogenic forms of diabetes, such as maturity onset diabetes of the young (MODY).[12]

5. CONCLUSION

Authors found no difference in dfs score, plaque score and gingival score in controlled and uncontrolled diabetics.

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