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Original Research

Evaluation of Oral Manifestations in Diabetic Patients- A Case Control Study

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ABSTRACT:
Background: Prevalence of diabetes is steadily increasing world wide. The present study was conducted to assess oral manifestations in patients with diabetes mellitus. **Materials & Methods:** This study was conducted on 100 type II diabetes mellitus patients of both genders and 100 healthy non-diabetic patients. A through oral examination was performed in all patients by using WHO dentition status 2013 performa. SPSS version 18 was used for statistical analysis. **Results:** In Group 1 67% patients were male and 33% patients were female whereas in Group 2 54% were males and 46% were females. Periodontitis was found in 89% diabetic patients and 48% non-diabetic patients. SPSS version 18 was used for statistical analysis. **Conclusion:** Common oral manifestation in patients with diabetes mellitus was dental caries, burning mouth, tooth loss. periodontitis, halitosis, geographic tongue and altered taste.
Key words: Diabetes, Altered taste, Periodontitis

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INTRODUCTION

Prevalence of diabetes is steadily increasing world wide, particularly in developing countries. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively.

Type 2 diabetes, formerly known as adult-onset diabetes, or non-insulin-dependent diabetes mellitus(NIDDM), is caused by a combination of insufficient insulin secretion in the pancreatic b-cells and insulin resistance in tissues, primarily in skeletal muscles and hepatic cells.[1]Initially, type 2 diabetes is characterized by hyperinsulinemia due to an increased insulin synthesis and secretion by pancreatic b-cells in order to overcome the insulin resistance of the muscles and the liver, but eventually the pancreatic b-cells fail to produce sufficient amounts of insulin leading to fasting hyperglycaemia. Hyperglycemia plays an important role in the pathogenesis of diabetes-related microvascular complications.[2]

Several studies indicate that in type 2 diabetes, there is an asymptomatic preclinical period during which hyperglycaemia and other risk factors are present and wide spread micro- and macrovascular complications are developing. The risk factors include abdominal obesity, dyslipidaemia (elevated fasting plasma triglyceride and reduced plasma HDL-cholesterol), essential hypertension (140/90 mmHg) and cigarette smoking.[3] Evidence that diabetes significantly affects oral tissues is supported by data in an increasing number of publications. Diabetes causes changes in the periodontal tissues, oral mucosa, salivary gland function, and oral neural function and

increases the risk for caries. Additionally, reproductive hormone changes during pregnancy significantly affect periodontal health in women with pre-existing and gestational diabetes.[4] The present study was conducted to assess oral manifestations in patients with diabetes mellitus.

MATERIALS & METHODS

A case control study was conducted in the department of Oral Medicine & Radiology of UCMS, college of dental surgery, Nepal. The duration of the study was August 2018 to August 2019. A total of 200 patients were included in the study which were divided into two groups. Group 1 consisted of 100 Diabetic patients and Group 2 consisted of 100 healthy non diabetic patients. Ethical clearance was taken prior to the study. All the participants were informed about the procedure of the study and informed written consent was obtained. Ethical approval was taken from institutional ethical review board. Patients with other systemic diseases, newly diagnosed cases with disease duration of less than 1 year and with smoking and tobacco chewing habits were excluded from the study. Demographic details were recorded and a through oral examination was performed in all patients by using WHO dentition status, 2013[5]. Oral manifestations like halitosis, altered taste, geographic tongue, burning mouth were also recorded in a case record form. SPSS Software Version 18 was used for statistical analysis. P value less than 0.005 was considered significant.

RESULTS

A total of 200 participants were taken in the study which was divided into two groups having 100 participants in each group. In Group 1 67% patients were male and 33% patients were female whereas in Group 2 54% were males and 46% were females (Graph 1). The results show comparison of various oral manifestations observed in diabetic patients and non-diabetic group.

Graph 1: Distribution of study population on the basis of gender in both the groups

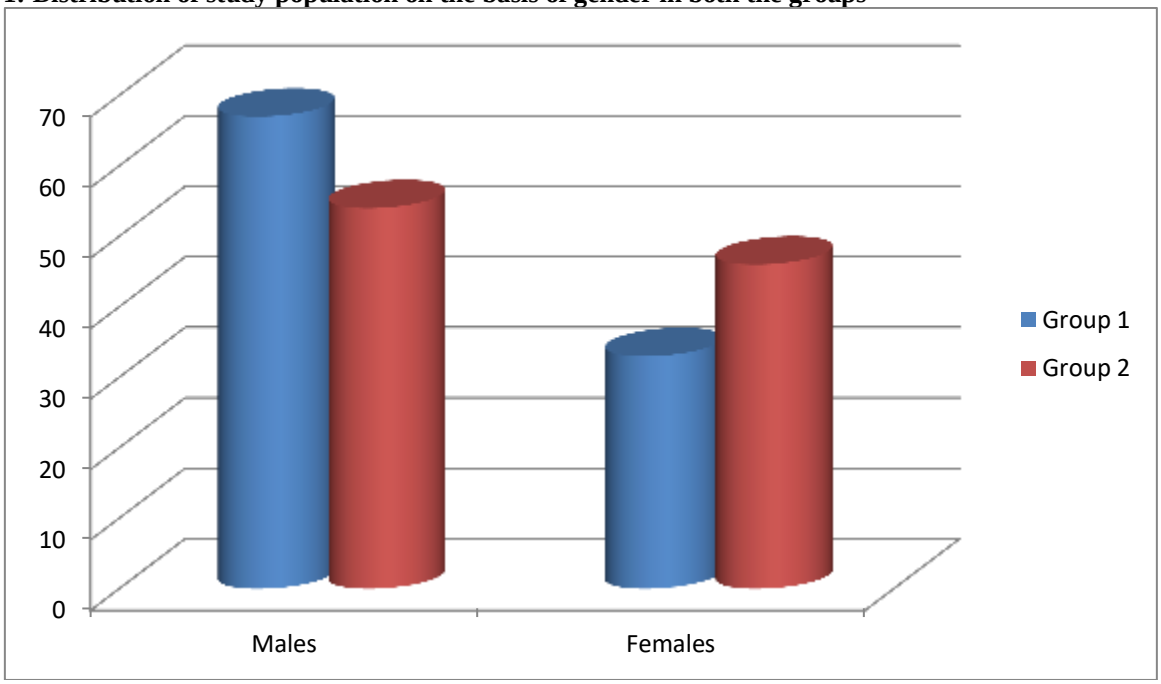


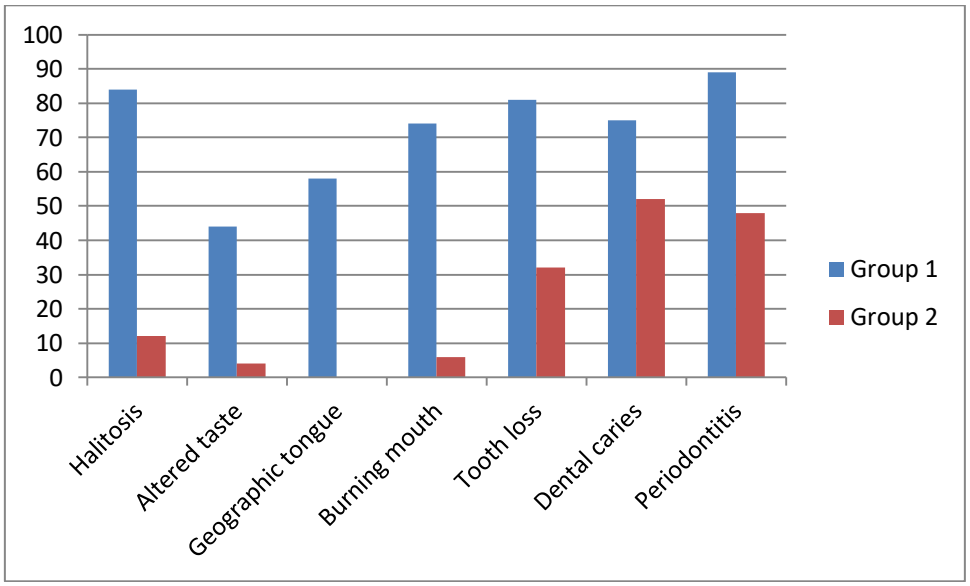
Table 1: Distribution of oral manifestations in both the groups

Oral manifestations	Group 1(%)	Group 2(%)	p-value
Halitosis	84	12	0.001
Altered taste	44	4	0.000
Geographic tongue	58	0	0.132
Burning mouth	74	6	0.055
Tooth loss	81	32	0.001
Dental caries	75	52	0.001
Periodontitis	89	48	0.002

Graph 2 shows the oral manifestations in both the groups. In Group 1 diabetic patients Halitosis was seen in 84%, altered taste in 44% patients, geographic tongue was seen in 58%, burning mouth was seen in 74%, tooth loss was seen in 81%,

dental caries was seen in 75% and periodontitis was seen in 89%. In Group 2 non-diabetic patients halitosis was seen in 12%, altered taste in 4% patients, geographic tongue was seen in 0%, burning mouth was seen in 6%, tooth loss was seen in 32%, dental caries was seen in 52% and periodontitis was seen in 48%. The statistical difference was found significant (P< 0.005) in halitosis, altered taste, tooth loss, dental caries and periodontitis and insignificant in geographic tongue and burning mouth (Table 1).

Graph 2: Oral manifestations in both the groups



DISCUSSION

The oral tissues most commonly affected by diabetes are the periodontal tissues. This can appear as redness and swelling of the gingiva, bleeding from the gingiva with minor provocation, looseness and spacing of teeth, and exposed root surfaces (at risk for caries) that may or may not carry plaque and mineralized deposits(calculus), depending on the oral hygiene of the individual.[6]

Although dental care providers have traditionally played a primary role in the examination and diagnosis of the specific disorders of these tissues, other health care providers who are responsible for diagnosing and managing patients with diabetes and pregnant patients can also easily screen for these oral abnormalities. Changes in oral soft tissues, in addition to periodontal tissues, can be helpful in the diagnosis of diabetes in undiagnosed patients and may serve as aids in monitoring the care of patients with known diabetes.[7] The present study was conducted to assess oral manifestations in patients with diabetes mellitus.

In this study, Periodontitis was found more prone in diabetic patients. Similarly in a study done by Hugoson et al[8] found significantly more periodontal disease in diabetics than in non-diabetic controls. In our study we found that common oral manifestations in patients was dental caries, periodontitis, halitosis, tooth loss, burning mouth, geographic tongue and altered taste. It was similar to study done by Sarita Bajaj[9] and her results included periodontal disease in 34%, oral candidiasis in 24%, tooth loss in 24%, oral mucosal ulcers in 22%, taste impairment in 20%, xerostomia and salivary gland hypofunction in 14%, dental caries in 24%, and burning mouth sensation in 10% cases. In our study altered taste was noted in 44% diabetic patients and 4% non-diabetic patients. In study done by Ravindran R et al[10] altered taste sensation was also noted in 35% diabetic patients. In our study halitosis was found in 84% diabetic patients and 12% in non-diabetic patients. Halitosis was primarily caused by bacterial putrefaction and generation of volatile sulfur compounds.[11-13] Dental professionals must be well aware regarding the complications of diabetes mellitus. It is importance for dental professionals to raise the awareness of diabetic patients of their increases risk of oral diseases and impact of oral
health on their general health.[14,15]

CONCLUSION

Oral manifestations in diabetes patients are more severe and care must be given for early diagnosis and treatment. Dental and medical professionals should educate the common people regarding the oral and systemic complications of diabetes mellitus.

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