Original Article

Oral health knowledge and awareness among diabetic patients and a review of oral manifestations of diabetes mellitus

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Abstract

Diabetes mellitus affects more than 100 million people worldwide. There are various oral manifestations of diabetes mellitus. Certain oral fmdings may indicate undiagnosed or inadequately managed diabetes mellitus. The study was done to gather information on knowledge and attitude of diabetic patients regarding their oral health with the view of enhancing dental health education and also to review the oral manifestations in such patients.Most patients had decayed teeth,bleeding gums, bad breath, drymouth, oral ulcers, burning sensation, altered taste and fissuring in corner of mouth. The patients were found to have adequate awareness of their increased risk for oral diseases.

Keywords: Diabetes mellitus, health education, oral manifestation

Introduction:

mellitus (DM), is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion,insulin action or both.[1] The term "diabetes mellitus" is used to identify a group of disorders characterized by elevated levels of glucose in the blood. This elevation is the result of a deficiency in insulin secretion or an increased cellular resistance to the actions of insulin, leading to a variety of metabolic abnormalities involving carbohydrates, fats and proteins.[2]

Diabetes mellitus affects more than 100 million people worldwide.[3] Type I DM is caused due to decreased production of insulin by the beta cells of the islets of langerhans in the pancreas leading to insulin deficiency. Type 2 diabetes is usually associated with obesity, hypertension and hyperlipidemia.[4] Sustained hyperglycemia affects almost all tissues in the body, including those in the oral cavity.[2] DM is associated with many oral manifestations. Certain oral fmdings may indicate undiagnosed or inadequately managed DM.Table 1 lists the review of oral manifestations of diabetic patients.Not all patients are aware of the oral manifestations of diabetes. The Aims and Objectives of our study was to evaluate the oral health knowledge and awareness Among Diabetic Patients. The research design included Questionnaire Based Survey.

Materials and methods:

A 15-question survey instrument was developed. The study was done in a dental college and hospital with approval of the ethical committee. The questionnaire study was initiated only after validation of the questionnaire for reliability. The questionnaire was reviewed for content validity by a panel of 3 practicing oral physicians.The questionnaire was in english as well as translated in local language. The questionnaire was designed to assess the knowledge, attitude, and practices of diabetic patients along with corresponding demographic variables. Convenient sampling was taken for sample size determination. Only patients with diagnosed cases of diabetes were included in the study. Informed verbal consent was taken from each eligible participant before administration of the questionnaire. Willing participants were informed in detail by the investigators about the research project and its consequences. Privacy of the patients was ensured during filling of questionnaires. At the end of questioning, patients were informed about the impact of their systemic condition on oral health. The questionnaire was subjected to statistical analysis. Data were fed to SPSS software version 11 for descriptive statistics.

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Table I: *Review of Oral manifestations of Diabetic Patients*

Year	Oral manifestation
Gibson J et al (1990) [5]	Burning mouth syndrome, fungal infections, altered taste, erosive lichen planus, sialosis
Obradović B et al (1991)[6]	Xerostomia, glossopyrosis, stomatopyrosis, gingivitis with hyperkeratosis and exfoliations effecting the tongue and lips, membrane ulcerations
Quirino Mr et al (1995)[7]	Hyposalivation, taste alterations and burning mouth, with the main sign being parotid enlargement, candidosis of the erythematous type and proliferative lesions
Perros P, Macfarlane Tw (1996)[8]	Blunted taste response
Petrou-Amerikanou C et al (1998)[9]	Oral lichen planus, fissured tongue, irritation fibroma, and traumatic ulcers
Guggenheimer J et al (2000)[10]	Candidiasis,denture stomatitis, median rhomboid glossitis, denture stomatitis, generalized atrophy of the tongue papillae, and angular cheilitis
Moore Pa (2001)[11]	Coronal and root caries
Rajesh V (2001)[1]	Oral burning and taste disturbances,periodontal disease, salivary gland dysfunction, fungal infections, lichen planus and lichenoid reactions, dental caries,traumatic ulcers and irritation fibromas
Moore Pa et al (2001) [2].	Dry mouth
Ziółkowska J et al (2006)[12]	Caries, gingivitis and periodontitis,dental caries,salivary dysfunction, oral mucosal disease staste disturbances, neurosensory and visual disorders,
Cristina De Lima D et al(2008)[13]	Decreased salivary buffering capacity
Ira B (2008)[3]	Oral candidiasis; periodontitis, dental caries, dry mouth, lichen planus and recurrent aphthous stomatitis, burning mouth syndrome and dysphagia, altered taste sensation, gingivitis and periodontitis
Girtan M et al (2009)[14]	Candidiasis, lichen planus, recurrent aphthous stomatitis, gingivitis, salivary disorders, oral mucosa atrophy and rarely hypertrophy.
Al-Maskari AY, Al-Maskari MY, Al-Sudairy S (2011)[15]	Periodontal disease, fungal infection and salivary dysfunction
Bharateesh J, Ahmed M(2012)[16]	Dental Caries, periodontal disease

Table 2: Assessment of Knowledge, Attitude, and Practices of Diabetic Patients

Medication	Oral medicine Insulin Both insulin and oral medication Not on medication	81 5 1 13
Frequency of patient visit to physician for diabetes check up	Once a month Once in 3 months Once in 6 months Yearly When required	36 40 16 6 2
Frequency of patient visit to dentist	Every 6 months Once a year Never Whenever required	24 32 16 28
Whether the patient feels there's a need to inform dentist about the diabetes status	Yes No Not sure	70 26 4
Has the patient failed to inform dentist about diabetes status	Yes No	17 83
How many times does the patient brush his/her teeth?	Once daily Twice Daily	21 79
Whether the is patient aware of any dental or oral problem	Yes No Don't Know	19 61 20

Table 3: Oral Manifestations As Reported by Patients In This Study

Oral manifestation	Dry mouth	Pus discharge	Decayed teeth	Delayed wound healing	Altered taste sensation
Yes	19	0	33	0	4
No	81	100	67	100	96

Oral manifestation	Fissuring in corner of the mouth	Bleeding gums	Burning sensation	Ulcers	Deposits
Yes	3	27	6	9	3
No	97	73	94	91	97

Result:

The total sample size was 100. Out of 100 patients, it was seen that majority of diabetic patients were on oral medication and visited physician at least once in 3 months, whereas most patients visited dentist only when required. Majority of the patients had Type II Diabetes mellitus It was also seen that almost all

symptoms were prevalent on patients who were taking oral medication. (Table 2 and 3)

Discussion:

Most patients in this study complained of decayed teeth,followed by bleeding gums, bad breath, drymouth, oral ulcers, burning sensation, altered taste, fissuring in corner of mouth which was consistent with the study carried out by Obradovic B et al (1991) and Ira et al (2008).[6,3] It was seen that almost all symptoms were prevalent on patients who were taking oral medication. Most of the patients felt the need to inform dentist about the diabetes status and did not fail in informing their dentist about their diabetes status. Therefore, patients were found to have adequate awareness of their increased risk for oral diseases which was inconsistent with the findings of the study carried out by Eldarrat AH(2011)[17]. However, issues on higher dental education need to be addressed. Appropriate educational programs should be planned according to community needs, and the target of these programs should be patients with irregular visits to the dentist and physicians. Oral hygiene behaviour and seeking oral health care depend on a number of factors. Patients comply better with oral health care regimens when informed and positively reinforced. Lack of information is among the reasons for non adherence to oral hygiene practices. Further, oral health attitudes and beliefs are significant for oral health behaviour.[8] Health education attempts to change behaviours by altering an individual's knowledge, attitudes, and beliefs about health matters. A higher likelihood of seeking preventive dental care is found to be associated with dental knowledge.[11] The present study aims to gather information on knowledge, attitude, and practices of diabetic patients regarding their oral health with the view of enhancing dental health education for this population, which would upgrade their knowledge and understanding. This is believed to improve the oral health status of the diabetic patients, in turn controlling diabetes and, ultimately, quality of life.

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