

Frequency Of Oral Findings With Reference To Diabetes Mellitus Patients: A Multi-center Cross-sectional Study

Muhammad Shahrukh Khan Sadiq, Moona Mumtaz, Syed Abrar Ali, Jouhrah Hussain Khan, Syed Ahmed Omer, Zahra Karim, Daud Mirza

ABSTRACT:

Objective: Oral pathological findings are often associated with diabetes mellitus. The aim of the study was to assess the frequency of oral findings among diabetic patients of both genders.

Materials and Methods: A cross-sectional observational study was conducted from February 2017 to November 2017 at Bahria University Dental Hospital & Mamji Hospital, Karachi. A total of 363 diagnosed patients of diabetes mellitus were selected for the study. A questionnaire was designed and oral clinical examination was performed. The collected data was analyzed by using SPSS version 23.

Results: A total number of 363 diagnosed patients of diabetes mellitus were included in the study. Among these 187 (51.52%) were male and 176 (48.48%) were female. The overall oral mucosal findings were predominantly present in male diabetic patients as compared to females.

Conclusion: The result of this study showed a high prevalence of oral pathological findings in diabetic patients.

Keywords: Dentistry, Diabetes mellitus, Oral mucosa, Lesions

INTRODUCTION:

Diabetes Mellitus (DM) is an endocrine disorder which is highly prevalent around the globe¹. First reported case of DM was found in an Egyptian manuscript dated around three millenniums ago². In the contemporary times, it has become a major public health concern and a leading cause of morbidity and mortality³. This metabolic syndrome is mediated by numerous factors resulting from deficiency of insulin, which may be absolute due to pancreatic beta-cell destruction (Type 1) or relative due to an increased resistance of the tissues to insulin (Type 2)^{4,5}.

The etiology of DM is multifactorial in origin. Environmental

factors like obesity, sedentary lifestyle and diet are the main causes. Other socioeconomic factors such as rising living standards, steady urban migration, and lifestyle changes are possible factors for development of DM^{6,7,8}.

The prevalence of DM varies from country to country. The demographical studies have shown that the prevalence of DM in Pakistan is high, ranging from 7.6% to 11%¹.

In patients of DM various alterations had been observed in the oral cavity, including inflammatory conditions such as gingivitis and periodontitis. Salivary dysfunction, altered taste and burning mouth are also seen. Oral mucosal lesions were also reported in DM patients in the form of stomatitis, geographic tongue (GT), benign migratory glossitis (BMG), fissured tongue (FT), traumatic ulcers, lichen planus, lichenoid reaction and angular cheilitis^{7,8}. Furthermore, dental caries, tooth loss and delayed mucosal healing have been also found in patients^{8,9,10}.

The aim of this study was to determine the frequency and types of oral mucosal findings and investigating the possible association with DM.

MATERIALS AND METHODS:

The present cross-sectional study was carried in patients, who visited Dental OPD at Bahria University Dental Hospital (BUDH) and Mamji Hospital, Karachi. The study lasted for the period of 10 months from February 2017 and November 2017. A total of 363 diagnosed patients of diabetes mellitus of both genders were examined. The patients, who were non-diabetic, medically handicapped and those unwilling to give consent, were excluded from the study.

The patient's data including gender, chief complaint, social habits and type of oral finding were recorded on proforma. The data was statistically analyzed by Statistical Package

Muhammad Shahrukh Khan Sadiq, Lecturer, Department of Oral Pathology, Bahria University Medical and Dental College (BUMDC)
Moona Mumtaz, Lecturer, Department of Oral Medicine, BUMDC
Syed Abrar Ali, Associate Professor and HOD Operative Dentistry, Dental Section Hamdard College of Medicine & Dentistry, Hamdard University, Karachi
Jouhrah Hussain Khan, General Dentist, Australia
Syed Ahmed Omer, Assistant Professor, Head of Department Science of Dental Materials, BUMDC
Zahra Karim, Lecturer, Department of Oral Pathology, BUMDC
Daud Mirza, Associate Professor and Head of Department Oral Pathology, BUMDC Email: dr.daud_mirza@hotmail.com
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for the Social Sciences (SPSS) version 23 to find out the significance of variables.

RESULTS:

A total number of 363 diagnosed patients of DM were included in the study. Among these 187 (51.52%) were male and 176 (48.48%) were females.

In present study, with respect to gender, higher frequency of linea alba, that is 34.76%(65), was also seen in males. It was followed by fissured tongue and racial pigmentation of gums with 31 (16.58%) and 17(9.09%) cases respectively. Similarly, in females the linea alba 24.43% was dominant while fordyce granules 14.77% and fissured tongue 14.20% came after in descending order. (Table: 1)

DISCUSSION:

DM is a disease spreading rapidly across the globe^{11,12}. The

middle and low-income countries show increased incidence of the disease above 60 years of age group^{13,14}. According to the statistics of the International Diabetes Federation (IDF), Pakistan stands on number seventh position in global standings^{15,16}. This concerning situation poses a grave challenge for health care professionals in the country^{17,18}.

The present data findings has identified a high prevalence of oral mucosal findings among DM patients. Earlier study documented the prevalence of oral mucosal lesions among diabetes patients that was about 80%¹⁹. Similar studies conducted in Brazil and Malaysia showed high prevalence of oral lesions in diabetics than controls²⁰.

Linea alba are white lines that occur most commonly on the buccal mucosa either due to pressure, friction, sucking or trauma. It had the highest number of cases in our subjects²¹. Mirza et al recorded 76 cases of linea alba among non-

Oral Findings	Male	Female	Total
Racial pigmentation	17 (9.09%)	5 (2.84%)	12 (3.30%)
Frictional Keratosis	4 (2.14%)	2 (1.12%)	6 (1.65%)
Angular cheilitis	13 (6.95%)	22 (12.5%)	35 (9.64%)
Denture stomatitis	3 (1.60%)	6 (3.41%)	9 (2.48%)
Apthous ulcer	7 (3.74%)	7 (3.98%)	24 (6.61%)
Leukoplakia	3 (1.60%)	0 (0%)	3 (0.83%)
Traumatic Ulcer	12 (6.42%)	19 (10.79%)	31 (8.54%)
Candidiasis	2 (1.46%)	0 (0%)	2 (0.55%)
Linea Alba	65 (34.76%)	43 (24.43%)	108 (29.75%)
Oral Lichen planus	4 (2.14%)	4 (2.27%)	8 (2.20%)
Tongue tie	1 (0.53%)	4 (2.27%)	5 (1.38%)
Median Rhomboid Glossitis	3 (1.60%)	5 (2.84%)	8 (2.20%)
Fissured tongue	31 (16.58%)	25 (14.20%)	56(15.43%)
Hairy Tongue	2 (1.46%)	5 (2.84%)	7 (1.93%)
Geographic tongue	4 (2.14%)	3 (1.70%)	7 (1.93%)
Fordyce granule	16 (8.56%)	26 (14.77%)	42 (11.57%)
Total	187 (51.52%)	176 (48.48%)	363

Table 1: Table showing oral lesion findings with respect to gender and frequency

diabetic patients in the same setting²².

The second most common category of oral findings was fissured tongue (FT) in both genders but, with male predominance. However, Jahanbani et al. conducted a study in Tehran which showed higher frequency of FT in females than males²³. In 2016, a domestic study conducted by Mohsin and colleagues documented a total of 15.9% of FT in total of 225 cases in Karachi. The frequency coincides with our study which shows 15.43% of FT in 363 subjects²⁴.

Fordyce granules was the third most common finding in present study. However, study conducted by Mirza in 2017 showed the highest prevalence of fordyce granules among the DM patients²⁵.

CONCLUSION:

DM is a chronic insidious disease that may later result in neuropathy, nephropathy and retinopathy etc. Furthermore, oral mucosa is adversely affected. It can be deduced that in addition to the systemic complications, the dentists should monitor the oral health of DM patients, since a high incidence of oral mucosal alterations indicates a need for urgent treatment. The study also emphasizes on regular clinical examinations to ensure early diagnosis and prompt tackling of adverse oral findings in DM patients.

REFERENCES:

- Hussain A, Ali I. Diabetes mellitus in Pakistan: A major public health concern. *Arch Pharma Pract* 2016; 7: 30-2.
- Ahmed AM. History of diabetes mellitus. *Saudi Med J* 2002; 23(4): 373-378.
- Qidwai W, Ashfaq T. Imminent epidemic of diabetes mellitus in Pakistan: Issues and challenges for health care providers. *JLUMHS* 2010; 9: 112-3.
- Silva MFA, Barbosa KGN, Pereira JV, Bento PM, Godoy GP, Gomes DQ de C. Prevalence of oral mucosal lesions among patients with diabetes mellitus types I and II. *Anais Brasileiros de Dermatologia*. 2015; 90(1): 49-53.
- Mealey BL, Ocampo GL. Diabetes mellitus and periodontal disease. *Periodontol* 2000. 2007; 44: 127-153.
- Kapoor D, Bhardwaj AK, Kumar D, and Raina SK, "Prevalence of Diabetes Mellitus and Its Risk Factors among Permanently Settled Tribal Individuals in Tribal and Urban Areas in Northern State of Sub-Himalayan Region of India," *International Journal of Chronic Diseases*, vol. 2014, Article ID 380597, 9 pages, 2014.
- Tol A, Sharifirad G, Shojaezadeh D, Tavasoli E, Azadbakht L. Socio-economic factors and diabetes consequences among patients with type 2 diabetes. *Journal of Education and Health Promotion*. 2013;2:12.
- Rabi DM, Edwards AL, Southern DA, et al. Association of socio-economic status with diabetes prevalence and utilization of diabetes care services. *BMC Health Services Research*. 2006; 6: 124.
- Al-Maskari AY, Al-Maskari MY, Al-Sudairy S. Oral Manifestations and Complications of Diabetes Mellitus: A review. *Sultan Qaboos University Medical Journal*. 2011; 11(2): 179-186.
- Mealey BL: The interactions between physicians and dentists in managing the care of patients with diabetes mellitus. *J Am Dent Assoc* 139 (Suppl. 5):4S-7S, 2008.
- Hu FB. Globalization of Diabetes: The role of diet, lifestyle, and genes. *Diabetes Care*. 2011; 34(6): 1249-1257.
- Kapp JM, Boren SA, Yun S, LeMaster J. Diabetes and tooth loss in a national sample of dentate adults reporting annual dental visits. *Preventing chronic disease*. 2007; 4(3): A59.
- Lamster IB, Lalla E, Borgnakke WS, Taylor GW. The relationship between oral health and diabetes mellitus. *J Am Dent Assoc*. 2008; 139: 19-24.
- Kaur G, Holtfreter B, Rathmann W, Schwahn C, Wallaschofski H, Schipf S, et al. Association between type 1 and type 2 diabetes with periodontal disease and tooth loss. *Journal of clinical periodontology*. 2009; 36(9): 765-74.
- Statistics of IDF MENA (International Dental Federation, Middle East North Area) 2015.
- World Atlas of International Diabetes Federation (IDF) World Atlas.
- Bahadar H, Mostafalou S, Abdollahi M. Growing burden of diabetes in Pakistan and the possible role of arsenic and pesticides. *J Diabetes Metab Disord* 2014; 13: 117.
- Vasconcelos BC, Novaes M, Sandrini FA, Maranhão AW, Filho, Coimbra LS. Prevalence of oral mucosa lesions in diabetic patients: a preliminary study. *Braz J Otorhinolaryngol*. 2008; 74: 423-428.
- Al-Maweri SA, Al-Jamaei AA, Al-Sufyani GA, Tarakji B, Shugaa-Addin B. Oral mucosal lesions in elderly dental patients in Sana'a, Yemen. *J Int Soc Prevent Communit Dent* 2015.
- de Souza Bastos A, Leite ARP, Spin-Neto T, Nassar PO, Massucato EMS, Orricoemail SRP. Diabetes mellitus and oral mucosa alterations: Prevalence and risk factors. *Diabetes Res Clin Pract*. 2011; 92(1): 100-105.
- Neville B.W., Damm D.D., Allen C.M., Bouquot J.E. third ed. Saunders Elsevier; Missouri: 2009. Oral and maxillofacial.
- Mirza D, Karim Z, Marath M, Ahmed M, Zaidi N. Frequency and distribution of oral mucosal lesions: A cross-sectional study. *Pakistan Oral & Dental Journal*, 2017; 37(1): 45-48.
- Jahanbani J, Sandvik L, Lyberg T, Ahlfors E. Evaluation of Oral Mucosal Lesions in 598 Referred Iranian Patients. *The Open Dentistry Journal*. 2009; 3: 42-47.
- Dikshit RP, Ramadas K, Hashibe M, Thomas G, Somanathan T, Sankaranarayanan R. Association between diabetes mellitus and pre-malignant oral diseases: across sectional study in Kerala, India. *Int J Cancer*. 2006; 118: 453-457.
- Ali M, Joseph B, Sundaram D. Prevalence of oral mucosal lesions in patients of the Kuwait University Dental Center. *The Saudi Dental Journal*. 2013; 25(3): 111.

