ORIGINAL RESEARCH PAPER
Volume - 9 | Issue - 6 | June - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PERIODONTAL HEALTH AWARENESS AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS: A QUESTIONNAIRE BASED SURVEY

Periodontology

Dr Abha Hedaoo* Junior Resident, Department of Periodontology,YMT Dental College,Navi Mumbai.*Corresponding Author

Dr Sweety Agarwal Senior Resident, Department of Periodontology,YMT Dental College,Navi Mumbai.

Dr Asha Prabhu Professor, Department of Periodontology,YMT Dental College, Navi Mumbai.

ABSTRACT

Background: Diabetes mellitus is a systemic disease with several major complications affecting both the quality and span of life. Studies indicate that diabetic patients are more likely to develop periodontal disease. Treatment of periodontal disease has shown to improve the status of diabetes. Thus, it is important to ensure optimal oral health care for diabetic patients. **Aim:** To investigate the periodontal health awareness among type 2 diabetic patients. **Materials and Methods:** A questionnaire based survey was conducted on 550 patients with type 2 diabetes mellitus to assess the objectives of the study. **Results and conclusion:** The present survey revealed that patients with type 2 diabetes mellitus have little awareness of their increased risk of acquiring periodontal disease. To reduce this risk, it is important to educate them about the two way association between diabetes mellitus and periodontitis.

KEYWORDS

Diabetes mellitus, periodontal disease

INTRODUCTION

Diabetes mellitus consists of a group of metabolic disorders resulting in acute and chronic complications due to either complete or relative lack of insulin. One of these complications is periodontal disease. Studies indicate that diabetic patients are more likely to develop periodontal disease and display a greater severity of periodontal disease. Many studies have shown a bidirectional relationship between periodontal disease and diabetes mellitus.

Periodontitis results in destruction of supporting and investing tissues around teeth. This destruction is irreversible in nature. The mechanistic pathways that link diabetes and periodontitis involve aspects of inflammation, immune functioning, neutrophil activity, and cytokine biology.[1]

Hyperglycaemia enhances levels of several cytokines in saliva and gingival crevicular fluid (GCF), oxidative stress in periodontal tissues and formation of Advanced Glycation Endproducts (AGE). The AGE–RAGE (Receptor for AGE) interaction leads to the exaggerated inflammatory response and periodontal tissue destruction seen in diabetes.2 Non-resolving chronic inflammation due to periodontal disease impacts on diabetes control (elevated HbA1C) and may also lead to complications.

Several studies have investigated the awareness of diabetic patients regarding their periodontal health and the increased risk for periodontal disease. In a controlled study conducted in Sweden, 83% of diabetic patients were found to be unaware of the link between periodontal disease and diabetes 3. Another study conducted in the USA involving 390 patients with diabetes found that only 18.2% recognized that their oral health might be affected by diabetes 4. In another study conducted on a random sample of 405 diabetic patients in Jordan showed that approximately 48% were aware that diabetic patients are more susceptible to periodontal diseases and oral health complications, and approximately a third (38%) knew that periodontal treatment may help in controlling diabetes [5].

Considering these potential interactions between diabetes and periodontal disease, it is important to ensure optimal oral health care for diabetic patients. At the present time, little is known about the knowledge diabetic patients have about the two way association between their health and periodontal disease Therefore, the aim of this study was to investigate the periodontal health awareness among type 2 diabetic patients. The two objectives were: Do patients with type 2 diabetes mellitus have awareness about their periodontal health? Do patients with type 2 diabetes mellitus have knowledge about the two way association between their health and periodontal disease?

MATERIALS AND METHODS:

A questionnaire based survey was carried out on 550 patients having type 2 diabetes mellitus. A structured, close-ended questionnaire was prepared in English, Marathi and Hindi. The study was designed and conducted at the Department of Periodontics,Yerala Medical Trust dental college, Navi Mumbai. The questionnaire was distributed by the principal investigator. It was divided into 3 sections. First section included demographic characteristics of the patient. Second section included the questions on oral hygiene and third section included their knowledge regarding the two way association.

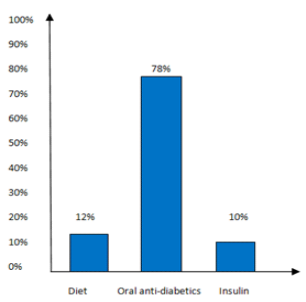
Patients within the age group of 35–59 years; patients without any condition that limits their ability to brush their teeth; patients with >20 teeth; and patients who can read and write either in English, Marathi or Hindi were included in the study. 550 participants were included in the study and the completed questionnaire forms were collected and analyzed.

STATISTICAL ANALYSIS

Data collected was entered into spreadsheets in MS Excel and was subjected to statistical analysis SPSS 15.0. The total score including that of the sub options were added up and were divided by the number of participants to obtain mean value and percentage. Also, MS Excel was used to tabulate the results in graphs, charts and pie diagram.

RESULTS

Out of 550 included subjects, 223 were males and 277 were females. 40% of the included subjects had diabetes since 4 years, 55% since 5-10 years and 10% since more than 10 years. In the past 6 months 18% of the subjects did RBS, 43% did FBS, 12% HbA1C and 27% did not do any test. Graph 1 shows the type of ongoing treatment for diabetes . 12% of included subjects were undergoing lifestyle modifications like dietary changes. 78% were under oral anti diabetic drugs and 10% are taking insulin as a part of their treatment regimen. Figure 2 shows how many subjects out of 550 were informed by their physicians about the inter relationship between diabetes and periodontitis. Only 5% of the subjects were informed by their physicians about the existing inter relationship. Figure 3 shows how many subjects believe that improvement in oral hygiene can improve the status of their diabetes.



Graph 1: Patients under different treatments for diabetes.

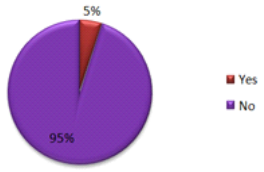


Figure 2: How many subjects were informed by their physicians.

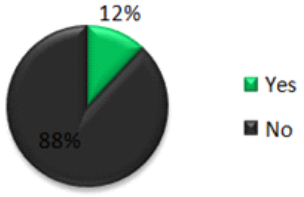


Figure 3: How many patients believe that oral hygiene can improve diabetes.

DISCUSSION:

Grossi and Genco in 1998 proposed that the relation between periodontitis and diabetes is bi-directional,6 this was further supported by Taylor7. There are many factors that stop patients with DM from seeking dental care, including financial factors, the fear of dental treatment, ignorance and lack of knowledge of the need for dental check-up.

The World Dental Federation and International Diabetes Federation have stated that the key for the prevention of periodontitis in patients with DM lies in close collaboration between dentists and physicians. However, in the present study it was found that only 5% of the subjects were informed by their physicians about the existing inter relationship. Bowyer et al. reported that 69.1% of the interviewed study participants were never advised by health-care professionals on the correlation of oral hygiene with diabetes 8. In the present study, majority of the participants belonged to the age group of 41–50 years (36.8%). The relationship of awareness of periodontal health was independent of age. DM increases the susceptibility to, and severity of, infections due to the reduction in functional activity of neutrophils (first line of defense) and consequently contributes to delayed wound healing 9. Clinical investigations in diabetic patients clearly demonstrated consistent defects in neutrophil chemotactic, phagocytic, and microbicidal activities 10. Evidence points to a two way association between diabetes and periodontitis affecting each other, which therefore brings the diabetics to the attention of oral health practitioners. The management of DM is also dependent on patient's ability to self-care in their daily lives, which is often better when the patient is educated regarding the importance of oral health and its effects on systemic health. Therefore, patient education is always considered as an essential element for any treatment.

Lower duration of DM was significantly associated with the lack of knowledge on association between periodontal disease and DM whereas patients with longer duration were likely to have higher level of awareness 11. Conference convened by the Columbia University College of Dental Medicine on “Diabetes and Oral Disease: Implications for Health Professionals” summarized and emphasized that inter professional patient management is essential to achieve improved health outcomes in affected individuals. Hence, there is need for comprehensive educational programs to promote good oral health and impart education among professionals too 12. The National Diabetes Education Program introduced the PPOD Checklist to promote proper diabetes management by pharmacists, podiatrists, optometrists, and dentists. Its goals are to ease communication among multiple providers, educate people with diabetes about needed examinations and of course the importance of metabolic control. Paquette et al. stated that medical and dental professionals should be taught to practice more collaboratively to actively participate in their patients' overall health management [13].

Based on the scientific evidence, the European Federation for Periodontology/American Academy of Periodontology recommended that patients with diabetes should be monitored carefully and periodontitis, if present, should be treated promptly providing various guidelines to physicians and dentists. This survey also shows ignorance on part of physicians failing to educate patients about this bidirectional association. Because only then will patients start visiting dentists diligently for their oral health. Once the periodontal treatment is completed there will be reduction in the overall inflammatory burden which might improve their glycemic index.

The limitation of the present survey was that it was carried out only on patients visiting the institute. Future surveys should focus on multicentricity and a larger sample size.

CONCLUSION:

The present survey revealed that patients with type 2 diabetes mellitus have little awareness of their increased risk of acquiring periodontal disease. To reduce this risk, it is important to educate them about the two way association between diabetes mellitus and periodontitis. The two way association between DM and periodontal disease must be made aware to the medical fraternity, who in turn can guide and motivate the patient for better diabetic control by maintaining good oral health.

REFERENCES:

[1] Taylor JJ, Preshaw PM, Lalla E. A review of the evidence for pathogenic mechanisms that may link periodontitis and diabetes. Journal of clinical periodontology. 2013 Apr;40:S113-34.
[2] Alba-Loureiro TC, Munhoz CD, Martins JO, Cerchiaro GA, Scavone C, Curi R, et al. Neutrophil function and metabolism in individuals with diabetes mellitus. Braz J Med Biol Res. 2007 Aug;40(8):1037–44.
[3] Sandberg GE, Sundberg HE, Wikblad KF. A controlled study of oral self-care and self-perceived oral health in type 2 diabetic patients. Acta Odontologica Scandinavica. 2001 Jan 1;59(1):28-33.
[4] Moore PA, Orchard T, Guggenheimer J, Weyant RJ. Diabetes and oral health promotion: a survey of disease prevention behaviors. The Journal of the American Dental Association. 2000 Sep 1;131(9):1333-41.
[5] Al Habashneh R, Khader Y, Hammad MM, Almuradi M. Knowledge and awareness about diabetes and periodontal health among Jordanians. Journal of diabetes and its complications. 2010 Nov 1;24(6):409-14.
[6] Grossi SG, Genco RJ. Periodontal disease and diabetes mellitus: A two-way relationship. Ann Periodontol. 1998;3:51–61.
[7] Taylor GW. Bidirectional interrelationships between diabetes and periodontal diseases: An epidemiologic perspective. Ann Periodontol. 2001;6:99–112.
[8] Bowyer V, Sutcliffe P, Ireland R, Lindenmeyer A, Gadsby R, Graveney M, et al. Oral health awareness in adult patients with diabetes: A questionnaire study. Br Dent J. 2011;211:E12.
[9] Alba-Loureiro TC, Munhoz CD, Martins JO, Cerchiaro GA, Scavone C, Curi R, et al. Neutrophil function and metabolism in individuals with diabetes mellitus. Braz J Med Biol Res. 2007 Aug;40(8):1037–44.
[10] Yano H, Kinoshita M, Fujino K, Nakashima M, Yamamoto Y, Miyazaki H, et al. Insulin treatment directly restores neutrophil phagocytosis and bactericidal activity in diabetic mice and thereby improves surgical site Staphylococcus aureus infection. Infect Immun. 2012 Dec;80(12):4409–16.
[11] Bakhshandeh S, Murtomaa H, Vehkalahti MM, Mofid R, Suomalainen K. Oral self-care and use of dental services among adults with diabetes mellitus. Oral Health Prev Dent. 2008;6:279–86.
[12] Albert DA, Ward A, Allweiss P, Graves DT, Knowler WC, Kunzel C, et al. Diabetes and oral disease: Implications for health professionals. Ann N Y Acad Sci. 2012;1255:1–5.