



# KNOWLEDGE AND AWARENESS OF THE ASSOCIATION BETWEEN DIABETES AND PERIODONTAL DISEASE AMONG DIABETIC PATIENTS IN MADURAI

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DOI:10.37841/jidam\_2021\_V8\_I1\_01

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Received: 10.02.2021

First Published: 18.03.2021

Accepted: 15.03.2021

Published: 27.03.2021

## ABSTRACT

One of the common major health problems that affect all age group is diabetes mellitus. There are proven evidences regarding the association between periodontitis and diabetes mellitus. The aim of the present study was to assess the knowledge and awareness of the association between diabetes and periodontal disease among the diabetic patients in Madurai. A total of 600 diabetic patients aged between 35-65 years who reported to the Department of Periodontology and Implant dentistry were included in the study. The overall knowledge, awareness score regarding the association was significantly low. The present study revealed that the dental professionals need to increase the awareness about importance of maintaining the oral health through awareness programs to educate and encourage the patients.

**KEYWORDS:** Diabetes mellitus, Periodontal disease, Awareness

## INTRODUCTION

Diabetes mellitus is a chronic disorder, which is characterized by hyperglycemia, that further leads to complications such as nephropathy, retinopathy, neuropathy, microvascular diseases, delayed wound healing and periodontitis. Periodontitis is a more commonly encountered oral health problem that leads to tooth mobility and tooth loss. According to American Diabetes Association in 1997, periodontitis has been considered as sixth complication of diabetes mellitus. Also, it has been proved that there is a bidirectional relationship between diabetes mellitus and periodontitis. There are substantial evidences supporting this two way relationship where diabetes mellitus increases the risk of periodontitis and the periodontal inflammation negatively affects the glyceemic control.<sup>1</sup>

The recent rise in number of diabetic patients is not only based on the genetic factor but also due to environmental factors like change in lifestyle. For successful treatment of both diabetes and periodontitis, patients themselves are the most determining factor. Lack of information is one of the major reasons for no adherence to lifestyle modification. Patients comply better with health-care regimens when they are informed and positively reinforced. Health education attempts to change behavior by altering an individual’s knowledge, attitude and belief about one’s own health matters.<sup>2,3</sup>

National diabetes fact sheet presented by the Centre for Disease Control and Prevention (CDC) in 2011 reported that adults aged 45 years or older with poorly controlled diabetes were 2.9 times more likely to develop severe periodontitis than nondiabetics. In the successful treatment and prevention of both these commonly prevalent diseases, knowledge about their mutual influence among the dentists, general practitioners and patients play a very critical role.

The present study was aimed to gather information on awareness and knowledge of the association between diabetes and periodontal disease among the diabetic patients in Madurai in view of enhancing dental health education that would upgrade their knowledge and awareness.

## MATERIALS AND METHODS:-

The present cross-sectional study was conducted in Madurai, Tamilnadu. Ethical clearance was obtained from institutional ethical committee of CSI College of Dental Sciences and Research, Madurai (IEC NO -

CSICDSR/IEC/0101/2019). Time limit of 3 months was set for data collection.

All the diabetic patients who participated in the study were given a questionnaire printed in English focusing on the knowledge and awareness of periodontitis. Pregnant, lactating mothers, patients on antibiotic therapy and participants not willing to participate in the study were excluded.

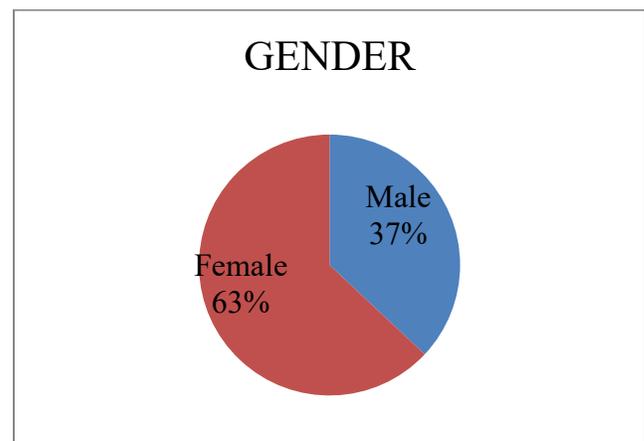
The structured questionnaire consisted of about 25 questions that focused on the awareness and knowledge about association between periodontitis and diabetes. Demographic data such as age, sex, educational status, and occupation have also been included in the questionnaire.

## STATISTICAL ANALYSIS:-

The collected data were imported into the Statistical Package for Social Sciences (SPSS) version 21 for statistical analysis. Data were represented in the form of pie charts and graphs. Chi-square test was used for assessing the awareness and knowledge about the association between diabetes and periodontitis among the diabetic patients.

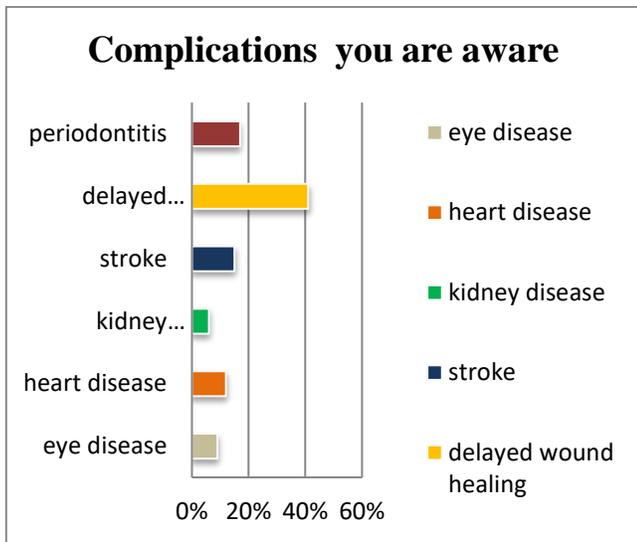
## RESULTS: -

Out of 600 diabetic patients who were included in the study, 37% were males and 63% were females.



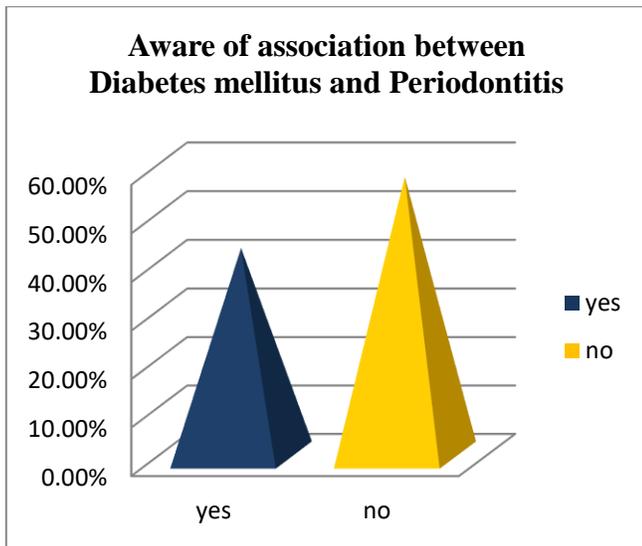
**Figure 1: Demographic distribution of the participants included in the study.**

Among all the six complications of diabetes mellitus, the diabetic patients were mostly aware of delayed wound healing when compared to other complications. Only 17% were aware of periodontitis being one of the complications for diabetes mellitus.



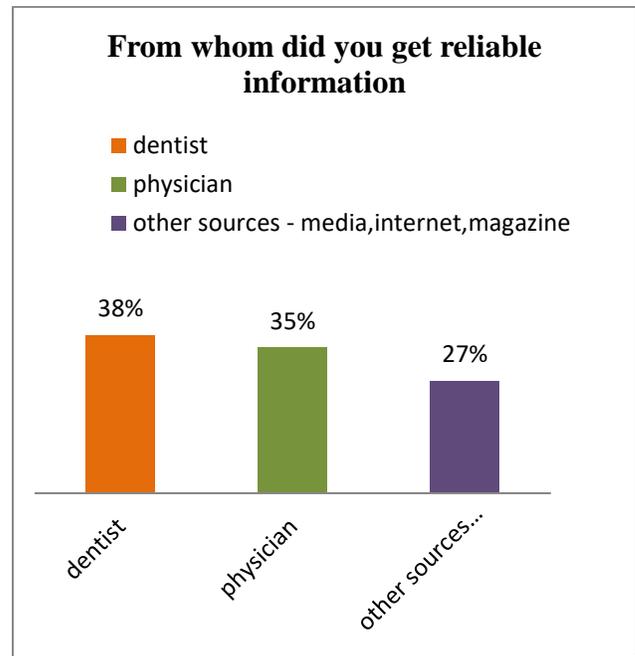
**Figure 2: Percentage of study participant’s awareness on the complications of diabetes.**

The patients were asked if they were aware of the association between diabetes mellitus and periodontitis. About 42.7% were aware of the association between diabetes and periodontitis whereas 57.3% were not aware.



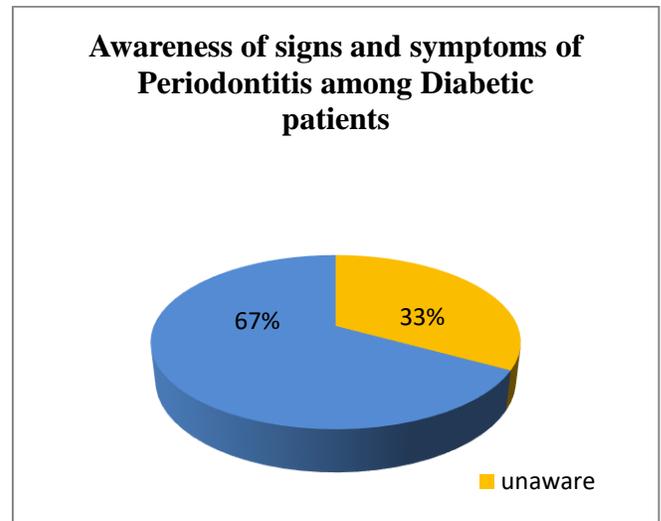
**Figure 3: Awareness of participants on the association between diabetes and periodontitis.**

It was observed that 38% of the participants got reliable information regarding the relationship between diabetes and periodontitis from dentist, 35% from physician and 27% through other sources like media, internet and magazines.



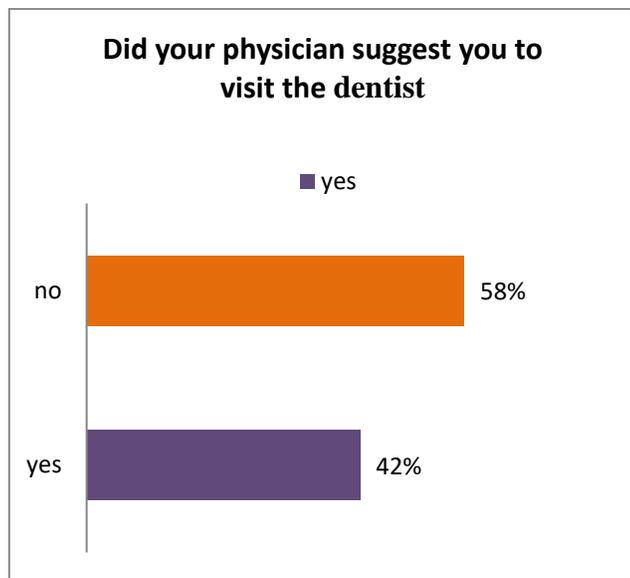
**Figure 4: Source of knowledge of study participants on the association between periodontitis and diabetes.**

Among 600 participants, only 33% were unaware about the signs and symptoms of periodontitis and 67% were aware on the signs and symptoms of periodontitis.



**Figure 5: Percentage of participants on awareness about signs and symptoms of periodontitis.**

The present study shows that only 42% of the physicians suggested their patients to visit a dentist.



**Figure 6 – Percentage of participants whose physician has suggested them to visit a dentist.**

#### **DISCUSSION:-**

Both periodontitis and diabetes mellitus are most frequently occurring diseases. Several studies and meta-analysis indicated the relationship between diabetes and periodontal disease. Grossi and Genco et al in 1988 proposed the bidirectional relationship between diabetes and periodontitis.<sup>4,5</sup>

There are various factors that deter the diabetic patients from obtaining dental care. Type II diabetic patients have increased risk for periodontal disease progression. According to a study by Aggarwal and Panat, only 10.8% of the patients with DM visit a dentist for regular check-ups and Indians with type 2 diabetes reported suboptimal oral hygiene behavior.<sup>6</sup>

Weinspach et al<sup>7</sup> reported that a total of 56% of the participants of their study had an insufficient knowledge about the mutual influence between diabetes and periodontitis, which correlates with the current study (50.2%). Among the diabetic study population, 38.3% had no idea about mutual relationship. In the present study, only 42.7% were aware of the association between diabetes and periodontitis whereas 57.3% were not aware.

Ummadisetty T et al concluded that only 49.8% of the sample population knew about the mutual relationship between diabetes and periodontitis and only 46% of the

diabetic study population was suggested to visit a dentist by the physician.<sup>8</sup>

Paquette et al stated that medical and dental professionals should be taught to practice more collaboratively to actively participate in their patient's overall health management.<sup>9</sup>

According to Shanmukappa et al (2017), only 46% of the general physicians suggested their patients to visit a dentist and 50.2% had insufficient knowledge and awareness.<sup>10</sup>

Studies have consistently shown that improved glycemic control would reduce the rate of complications and evidence also suggests that patients who are knowledgeable about diabetes mellitus, self-care have better long-term glycemic control. Thus, it is indispensable to ensure that patient's knowledge, attitude, and practices are adequate for preventive behaviors such as brushing, flossing, and periodic dental visits.<sup>11-13</sup>

#### **STRENGTH OF THE STUDY:-**

The strength of the study is large sample size (n=600). Also, it was found that patients were more aware of the systemic complications related to the eye and wound healing. There was less awareness related to the oral health which can be thus promoted.

#### **LIMITATION OF THE STUDY:-**

A future study of a larger diabetic population will be needed to substantiate the findings from the present study with the inclusion of economic status that might potentiate the study.

In our study, the questionnaire has been used as a tool to assess the knowledge and awareness and it would be more substantiating if we do the oral examination as well, to correlate the clinical findings and the presence of periodontitis.

#### **CONCLUSION:-**

Association between diabetes mellitus and periodontal disease must be made aware to the general public and as well as to the medical fraternity, who in turn can guide and motivate the patient for better diabetic control by maintaining good oral health. Periodontal therapy has positive effect on diabetic control, hence periodic care and maintenance of oral health is of utmost importance.

**FINANCIAL SUPPORT AND SPONSORSHIP**

Nil

**CONFLICTS OF INTEREST**

There are no conflicts of interest.

**REFERENCES:-**

1. Preshaw PM, Alba AL, Herrera D, Jepsen S, Konstantinidis A, Makrilakis K, et al. Periodontitis and diabetes: A two-way relationship. *Diabetologia* 2012;55:21-31.
2. International Diabetes Federation. *Diabetes Atlas*. 3rd ed. Brussels: International Diabetes Federation; 2006.
3. Kegeles SS. Some motives for seeking preventive dental care. *J Am Dent Assoc* 1963;67:90-8.
4. Genco, R. J., & Genco, F. D. (2014). Common risk factors in the management of periodontal and associated systemic diseases: The dental setting and interprofessional collaboration. *Journal of Evidence-Based Dental Practice* (14 Suppl.), 4-16.
5. Grossi SG, Genco RJ. Periodontal disease and diabetes mellitus: A two-way relationship. *Ann Periodontol* 1998;3:51-61.
6. Aggarwal A, Panat SR. Oral health behavior and HbA1c in Indian adults with type 2 diabetes. *J Oral Sci* 2012;54:293-301.
7. Weinspach K, Staufenbiel I, Memenga-Nicksch S, Ernst S, Geurtsen W, Günay H. Level of information about the relationship between diabetes mellitus and periodontitis – Results from a nationwide diabetes information program. *Eur J Med Res* 2013;18:6.
8. Ummadisetty T, Chava VK, Bhumanapalli VR. Diabetes and periodontitis: How well are the patients aware about an established relation? *J Indian Soc Periodontol* 2016;20:472-5.
9. Paquette DW, Bell KP, Phillips C, Offenbacher S, Wilder RS. Dentists' knowledge and opinions of oral-systemic disease relationships: Relevance to patient care and education. *J Dent Educ* 2015;79:626-35.
10. Shanmukappa SM, Nadig P, Puttannavar R, Ambareen Z, Gowda TM, Mehta DS. Knowledge, attitude, and awareness among diabetic patients in Davangere about the association between diabetes and periodontal disease. *J Int Soc Prevent Communit Dent* 2017;7:381-8.
11. Tash RH, O'Shea RM, Cohen LK. Testing a preventive-symptomatic theory of dental health behavior. *Am J Public Health Nations Health* 1969;59:514-21.
12. Saengtibovorn S, Taneepanichskul S. Effectiveness of lifestyle change plus dental care (LCDC) program on improving glycemic and periodontal status in the elderly with type 2 diabetes. *BMC Oral Health* 2014;14:72.
13. Saengtibovorn S, Taneepanichskul S. Lifestyle change plus dental care (LCDC) program improves knowledge, attitude, and practice (KAP) toward oral health and diabetes mellitus among the elderly with type 2 diabetes. *J Med Assoc Thai* 2015;98:279-90.