

Awareness of Oral Complications of Diabetes Mellitus in Diabetes Patients: A Questionnaire Study

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Abstract

Background: Diabetes mellitus is one of the many metabolic disorders that show a drastic increase in its prevalence with every year. Though there are many literatures available explaining the importance of oral hygiene in preventing complications in diabetes there is a tendency in the patients to ignore their oral hygiene. The role of dentist in resolving or preventing the oral complications is important at the same time, the patient themselves should take an initiative to acquire more knowledge about their condition.

Method: A two-page questionnaire was created in accordance with the OHSU guidelines for evaluating the awareness of oral complications in diabetic patients.

Results: Majority of the patients, irrespective of being graduates or literate lacked sufficient knowledge on oral complications of Diabetic patients in spite of being aware about the general complications.

Conclusion: Awareness is needed for the patients with diabetes in both systemic and dental complications as it can affect their quality of life. Diabetic individuals should be encouraged to get regular dental check-ups done and more frequently than non-diabetic individuals to seek active care for their problems for better prognosis and improved quality of life.

Keywords: *Diabetes, Questionnaire, Oral health, Complications of diabetes, OSHU guidelines.*

Introduction

Diabetes mellitus or diabetes is a group of metabolic disorder which is characterised by high blood glucose levels for a prolonged period of time. Diabetes is an endocrinal disorder of the pancreas where the gland is not able to produce insulin the hormone which regulates blood glucose levels in the body. Even with advance in treatment strategies still the prevalence and incidence of the disease is becoming alarmingly higher every year.

In the year 2016, 422 million people all over the world were estimated to be suffering from diabetes mellitus, which is an average of 8.3% of the total population of the world. WHO has reported an average of 1.5 million deaths due to diabetes every year all over the world and about 2.2 million death due to diabetes associated complications affecting the renal, cardiac system etc.⁽¹⁾

The need for special care to those affected with this disease was established as early as in 1900s with the first recognised step being the St Vincent Declaration in 1989, which aimed in improving the care of those affected with diabetes. Following this several countries have adopted various programs and measures to help these individuals to live a better life and to improve their life expectancy and living standards.⁽²⁾

Not only is the disease dangerous, but the complications produced by it as a result of it is more

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devastating. The aftermath of the disease affects many other systems in the body, mainly renal system, cardiac system, eyes. But though the knowledge about the behavioural pattern and characteristic of the disease is blooming every day, proper awareness is yet lacking in many. The individuals affected by diabetes lack the basic understanding of the course of the disease in their body and how it will behave, which leads to negligence and delayed diagnosis of many complications of it which if noticed earlier could have been at least controlled. Proper awareness of the disease as well as the complications of the disease should be provided to the patients as well as their family to prevent this. ⁽³⁾

The oral manifestations of diabetes vary in its severity in relation with the blood sugar level it can be as simple as normal gingivitis or xerostomia to as severe devastating opportunistic infections like mucormycosis or candidiasis. Proper awareness of oral complications is also relevant as maintenance of oral health also plays hand in hand with maintenance of blood sugar level. ⁽⁴⁾ If the patient has poor oral hygiene because of the compromised immune status owing to defective neutrophil chemotaxis seen in this condition predisposes the individual to many infections in the oral cavity, like dental caries, gingivitis, periodontitis, candidiasis etc. It is the duty of the dentist to impart to the patient importance of maintaining oral hygiene and the need for frequent dental visits especially in diabetic individuals for assessment of their oral health. Proper brushing techniques should also be demonstrated. The various oral complications that follow this disease should also be informed and ways in preventing as well as managing these complications also should be informed. ⁽⁵⁾

In this study we have conducted a questionnaire to assess the awareness of complications of diabetes in diabetic patients to evaluate the need for awareness campaign for the same.

Aim: To evaluate awareness of complications of diabetes mellitus in diabetic individuals.

Objectives:

1. Evaluate awareness of complications of diabetes mellitus in diabetic individuals.
2. Assess the need for awareness campaigns on complications of diabetes mellitus.

Materials and Method

The study was approved by the Institutional Review Board of SRM dental college. A two-page questionnaire was prepared following the guidelines by OSHU⁽⁶⁾ for questionnaire for evaluation of systemic evaluation of diabetic individuals and after referring the literature. The questionnaire was made in English language. The questionnaire included questions regarding:

- a. Duration of the diabetes.
- b. Patients awareness about the harmful complications of diabetes.
- c. Patients awareness about the importance of oral hygiene.
- d. Patients awareness about the oral complications of diabetes.
- e. Patients attitude about dental hygiene and awareness about the role of dentists in managing this disease.

No changes were made to the questionnaire during the course of the study.

Patients attending the department of Oral Medicine in SRM dental college, Ramapuram were included for the study. Out patients with known diabetes who were willing to participate in the study were included in the study after obtaining informed consent. Patients were asked to fill the forms either by themselves and those who did not understand English were allowed to take help from by-standers for filling the forms. A total of 106 responses obtained over a duration of 3 months. The results were compiled into graph and then analysed.

Results

A total of 500 diabetic individuals were given the questionnaire study, 302 responses were obtained. 64.8% of the respondents were graduates showing that diabetes is a life style disease which commonly affects the educated individuals. 40% of the respondents reported a history of diabetes for more than 10 years with 37.1% of individuals being affected for a duration of 2-5 years. 53.3% of the individuals reported no history of other systemic illness whereas 46.7% of the individuals reported other related health problems. 72.4% of the diabetic individuals check their blood sugar levels regularly. 39% of the individuals reported that they take insulin injection to manage their blood sugar levels.

Out of the 302 responses obtained, 48.1% of the individuals consult their physician only when need arises. Again, 80% of the patients go to dental check-up only when they have any symptomatic problem (Fig1). 35.8% of the patients noticed loosening of teeth or mobility of teeth, i.e., periodontal problem (Fig2).

70.5% of the individuals were aware that uncontrolled diabetes can cause delayed wound healing and 61.9% reported that they are aware of the increased risk of developing cardiac diseases. 52.4% of the diabetic patients were unaware of the risk of dryness of mouth associated with diabetes (Fig 3). 61.9% of the individuals had no idea that dryness of mouth is associated with increased risk of infections and caries development (Fig 4). 24.8% of the respondents have suffered from burning sensation of mouth. 35.2% of the patients suffer from frequent ulcer formation in their mouth.

64.8% of the respondents reported to have not been demonstrated proper tooth brushing technique (Fig 5). 62.9% of the respondents were informed about the importance of maintenance of oral health by their dentist. While enquired as to whether they discuss about their diabetic status to their dentist 41.9% reported that they donot see a dentist (Fig 6).

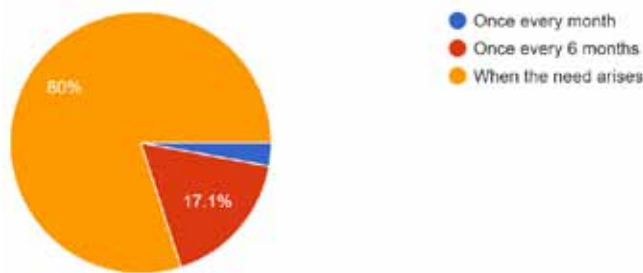


Figure 1: Dental check up

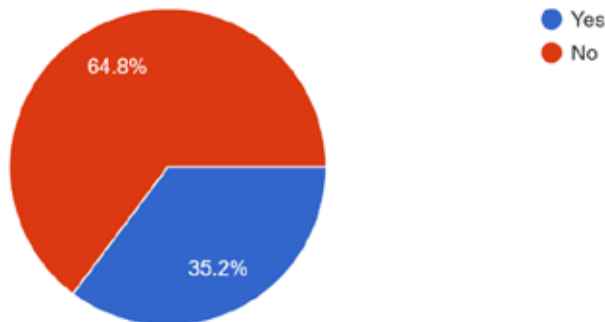


Fig 2: History of mobile tooth

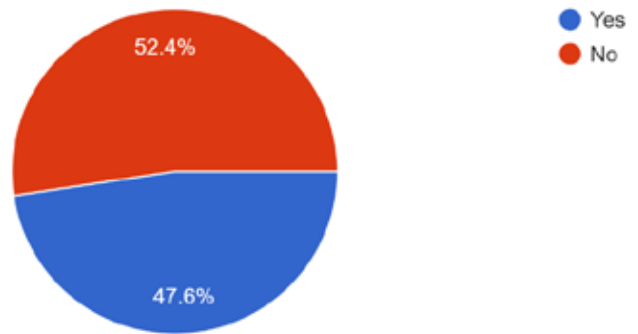


Figure3: Risk of dryness of mouth

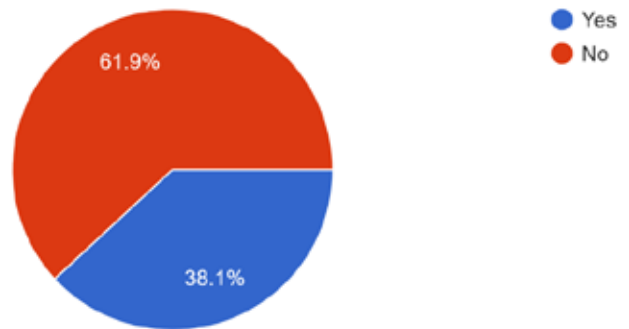


Figure 4: Risk of infections caused by dryness of mouth

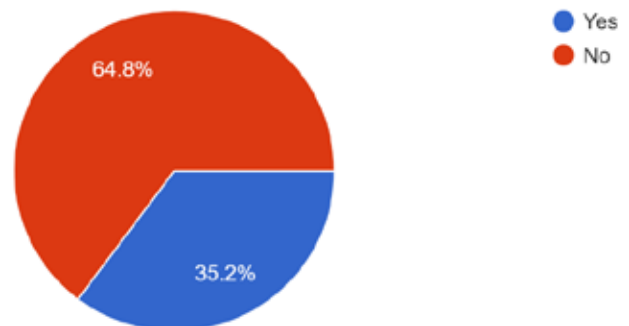


Figure 5: Demonstration of toothbrushing technique

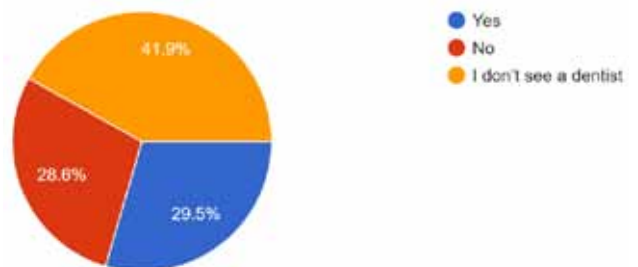


Figure 6: Discussing about diabetic status to Dentist

Discussion

Incidence of Diabetes mellitus has increased exponentially in the past two decades with 1.6 million

cases being diagnosed every year in India. It shows high prevalence among elderly and individuals affected with diabetes mellitus how a two to four fold increased risk of developing cardiovascular disease, peripheral vascular disease and stroke. The complications of diabetes account for about 65% of the mortality caused by it, making it the seventh most common cause of death in the country.⁽¹⁾

The surge in the number of new cases reported every year can be attributed to lack of proper platform for spread of awareness about the disease. Many of the patients as well as their caretakers are unaware of the devastating effects of this disease.⁽⁷⁾ The complications of this disease are product of the effect of either the reduction in the level of hormone or due to effect of the drugs administered to maintain blood sugar level. The number of individuals affected by diabetes mellitus is estimated to be around 552 million.⁽¹⁾

Diabetes mellitus is a disease whose causation is primarily attributed to lifestyle factors and genetics.⁽⁸⁾ Diabetes is considered to be a product of insulin sensitivity as a result of insulin resistance where there is a fall in the amount of insulin produced by the pancreatic beta cells of Islets of Langerhans.⁽⁹⁾ There is a dysregulation of level of blood glucose level. The amount of hepatic glucose and glucagon that are increased during fasting are not reduced with meal because of lack of insulin.⁽¹⁰⁾

In 2019, the American Diabetic Association gave 5 important guidelines for the Standard of Medical Care in Diabetes, which is directed in providing clinical practice recommendations and treatment goals and guidelines and tools to evaluate quality of care. In these guidelines the ADA has emphasised on the importance of diabetes self-management education and support as well as participation of the diabetic patients in achieving knowledge on the skills, ability necessary in diabetic self-care.⁽²⁾

In our study, we have performed a questionnaire study for assessing the awareness of the possible complications of diabetes mellitus in diabetic patients. Our results showed though 50-60% of the participants were aware about the different aspects of the disease still there is a part of the population who still don't understand fully the complications associated with this disease which will hamper the management of the disease.

In another study by Allen et al 2008, they assessed

the knowledge of diabetic patients regarding the increased risk of development of periodontal diseases showed that around 7% of the patients that participated were unaware of the type of diabetes they had. Also, the authors concluded that there is a need for awareness in diabetic patients regarding the potential association between diabetes, oral health and general health.⁽¹¹⁾

In a cross-sectional study conducted by Ahmed et al 2011, they compared the perceived health status in both hypertensive and diabetic patients who visited the primary health centres in Oman, they found that even though the mental scores in both the diseases were similar, the physical scores in patients with diabetes mellitus was lower than that in hypertensive patients.⁽¹⁰⁾

In 2012, Bharateesh et al, conducted a case-control study on diabetes patients to assess the prevalence of common dental infections like dental caries and periodontal disease and found that the prevalence was significantly higher in patients with diabetes than in non-diabetic individuals.⁽⁴⁾

In 2011, Bowyer et al, conducted a questionnaire study to assess the knowledge of diabetic patients visiting general dental practitioners in UK about the importance of oral health as well as on the complications in diabetes mellitus, they found that there was a poor knowledge and stressed on the need for awareness in patients as well healthcare professionals. They also wanted to recheck the role of dental care professionals in diagnosis of diabetes.⁽⁵⁾

Adults with diabetes mellitus were found to have poor awareness of the complications of diabetes and also lacked proper knowledge on the importance of oral hygiene in preventing many of these complications⁽¹²⁾. Majority of the patients who participated in our study admitted to visit dentist only when the need arises and many of the patients deter from visiting dentist. This is due to lack of knowledge about the importance of oral health care.

Despite the study's limitations, our study suggests that patients are receiving inadequate oral health care advice from dental and non-dental health professionals it is important to provide knowledge as well as preventive measures to prevent oral complications of diabetes as some of these may be debilitating. We would like to suggest the need for oral hygiene camps as well as awareness campaigns with emphasis on the oral health care and its role in diabetes.

Conclusion

Diabetes mellitus is a lifestyle-based disease with dangerously increasing incidence rates in the past few decades. Health professionals should be provided with knowledge about the oral manifestations as well as the proper complications of the disease. Diabetic individuals should be encouraged to get regular dental check-ups done and more frequently than non-diabetic individuals to seek active care for their problems for better prognosis and improved quality of life.

Ethical Clearance: Ethical clearance was obtained from the Institutional Review Board of SRM DENTAL COLLEGE, Ramapuram.

Conflicts of Interest: Nil

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