



A Study to Assess the Knowledge, Attitude, and Experience Regarding Diabetes and Its Related Conditions among Dental Practitioners

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Abstract

Diabetes is a chronic condition which leads to dysfunction of multiple systems and requires a multidisciplinary approach for its effective management. A survey was performed on 308 dental professionals to record their experiences regarding the awareness of oral complications as well as their means of effective communication with medical practitioners for better holistic diabetic care. Additionally, they were also asked knowledge-based questions and ones related to diagnostic criteria and data collection and interpretation. Roadblocks for the effective care with two-way communication with medical doctors were also recorded with possible solutions along with protocols for effective screening and assessment of current burden of disease, dealing with diabetic emergencies and reduction of morbidity for the patients to efficiently treat the diabetic patient in a dental practice.

Keywords

- ▶ diabetes
- ▶ dentistry
- ▶ holistic treatment
- ▶ communication
- ▶ complications of diabetes

Introduction

Diabetes mellitus (DM) is a group of metabolic diseases characterized by increased blood glucose level caused due inability to produce and/or use insulin.

Diabetics in India account for an estimated 77 million cases which accounts for approximately 17% of the world-wide cases. By 2045 it is projected to grow to 134 million as per International Diabetes Federation.^{1,2}

The oral cavity is commonly referred to as a gateway to the human body, and the overall health of an individual can be assessed by examining the state of their oral health. Irrespective of the extent of plaque buildup, the presence of gingivitis, periodontitis, and periodontal bone loss have been found to be linked to DM, particularly in cases of inadequate glycemic control. The development of diabetic periodontal disease is believed to be attributed to deficiencies in immune status, modified bacterial flora, and microvascular disease.

Moreover, there is substantial evidence suggesting that the presence of bacteremia in individuals with periodontitis plays a role in the development of insulin resistance and the ensuing death of pancreatic islet cells. Individuals with diabetes may experience the symptom of xerostomia, commonly referred to as dry mouth. Xerostomia can potentially arise as a result of either hyperglycemia-induced dehydration or impaired functionality of the salivary glands. Oral candidiasis infections exhibit a higher incidence among individuals with suboptimal glycemic control in diabetes.³

This study aimed to assess and record among dental practitioners their experiences regarding the awareness of diagnostic criteria, prevalence of diabetic patients and patients manifesting oral complications of diabetes, as well as their experience in establishment of effective communication with medical practitioners for better holistic diabetic care.

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Methodology

A survey was conducted among 308 practitioners and they were asked to answer a range of questions regarding their knowledge, source of knowledge, precautions, and practices specific to diabetes and affected patients. Additional questions were asked regarding the commonly encountered problems and possible solutions to the same. A separate section was present regarding cooperation and sharing of knowledge with medical practitioners attending to the same patient and barriers to the same. Twenty-eight questions were asked in total with some questions accepted multiple responses whenever appropriate.

The survey forms were circulated electronically using Google Forms (California, United States).

Results

A total of 308 participated, out of which 52.9% were post-graduates and remaining (47.1%) were graduates. Thirty-nine percent had 0 to 5 years' experience, 34.1% had 5 to 20 years' experience, and 26.9% had 20+ years of experience. A majority (54%) felt that their dental-related professional school had trained them well to address and manage patients with diabetes within their practice.

The source(s) cited for keeping up-to-date regarding oral and systemic health information was found to be continuing education programs (88.1%) and scientific journals (77.9%), with books (29.5%) and media (43.8%) being the other sources. Note that 54.2% of practitioners claimed that they frequently encounter diabetic patients (20–33% of total) followed by 28.6% who attended diabetic patients very frequently (> 33% of total). Also, 81.8% of practitioners reported that they educated their patients regarding links of oral health to diabetes always or often followed by 14.9% who would do it occasionally. Note that 50.6% of practitioners would ask for a physician's consent before any invasive procedure always, or often followed by 33.1% who would do it occasionally. Note that 65.9% of practitioners would do a chairside screening for diabetes sometimes or often.

Seventy-six percent of practitioners relied on patient-reported data, along with 56.8% of practitioners conducted chairside investigations, while 33.8% of practitioners consulted with physician directly to get data regarding the health of the patient.

A total of 143 practitioners had insulin in their practice for treating hyperglycemia followed by 44 who used oral hypoglycemics, 11 would consult to attached medical practice, and 102 had no drug for such a situation. Rapid acting insulin is the drug of choice in such a situation and can be administered subcutaneously after blood sugar is verified using a glucometer. Dosage of the same can be done on consultation with a medical practitioner based on the readings.

A total of 260 practitioners had glucose (powder/water) in their practice for hypoglycemia followed by 18 who used chocolates, 20 used glucagon, and 9 used intravenous dextrose. Hypoglycemia is a medical emergency and must be

treated with urgency. Glucose is administered immediately with liquid forms being absorbed faster; chocolates must be avoided as they take longer to absorb owing to their fat content. Glucagon can be administered in intramuscular or intravenous drip (dextrose) and can be given if the patient is not being able to accept glucose orally. It is discussed in detail further.

Note that 86.3% of practitioners frequently observed oral complications in diabetic patients often sometimes with periodontitis being the most common followed by delayed wound healing followed by secondary infections followed by tooth mobility and loss. Also, 71.2% practitioners prescribed antibiotics before invasive procedures in diabetic patients.

A majority (> 75%) of dental practitioners who took the survey showed good knowledge regarding diagnosis, presentation, and complications of diabetes.

Practitioners ideally would like to use the following aids to improve treatment and provide a more holistic approach—providing patient education surrounding oral health and diabetes connection, referring patients with prediabetes/diabetes to primary care providers, counseling patients on diabetes-oral health issues, among other things.

Note that 84.1% practitioners were prepared to test all at-risk patients chairside if viable.

When it came to integration between medical professional and dental professionals the major challenges encountered were—time, cost, low patient health literacy, patient cooperation or attitude, lack of communication between dental and medical professionals, among other things.

Discussion

The dental management of patients with diabetes is based on a comprehensive understanding of the individual's medical history related to diabetes. The dental operator should always be on alert mode to a possible undiagnosed diabetes in patients that visit them.

This study evaluated 308 practitioners of different demographics and work experience. The questionnaire included 28 questions that were divided into five sections that covered different demographics, practicing style, knowledge, and finally the subjective opinions on the effects of diabetes.

Also important to know are the types and causes of hyperglycemia affecting the patients as the management is different. Shah et al and Cronin et al have associated dental diseases such as alveolar pathology and gingival abscess with uncontrolled diabetes.^{4,5}

The practitioners with higher experience were aware of intraoral symptoms such as xerostomia, candida infection, or any smell of ketones and reported that they do record medical histories of the patients.

Majority of the dental operators claimed to have recorded the diabetic index of the patients before procedures as the hemoglobin A1c values play a vital role in the selection of dental treatments.⁶⁻⁸

The scheduling of dental appointments should consider the significance of maintaining nutritional consistency and avoiding conflicts with or interruptions to scheduled meals.

In the survey the practitioners informed that the scheduling of elective surgical procedures should consider both the anesthetic requirements of diabetic patients and the potential effects of the surgical procedure on their dietary intake.^{2,9,10}

The study showed the practitioners' high awareness of the occurrence of delayed alveolar healing after dentoalveolar surgery which could elicit the possibility of osteomyelitis. In such cases, it has been noted in the survey that most practitioners claimed that they promptly arrange a surgical consultation.⁸

The management of diabetes is a complex process that necessitates comprehensive collaboration between health care professionals and individuals with the condition to achieve optimal control. Dentists can continue updating the knowledge regarding the treatments, diagnosis, clinical findings, and screening to assess the greater control being exhibited by the patients.¹¹ Medical practitioners must be made aware to screen for the oral manifestations and possible complications of diabetes (tooth loss, xerostomia, periodontitis, etc.) and be referred to a dentist to treat the same replacement of teeth to restore function and mastication, controlling periodontitis, etc. These factors will in turn assist in the holistic treatment and ensure well-being of the patient.^{12,13}

Conclusion

In general, there was a favorable disposition observed toward DM in terms of knowledge, attitude, and practice in the study. To effectively integrate medical and dental screenings dental professionals must recognize the significance of patient value, their willingness to undergo screening, and their adherence to the screening process and medical professionals must also aim to ensure proper attention is given to the

dental manifestations of the condition to effectively manage it holistically.

Conflict of Interest

None declared.

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