



DENTAL CARE FOR PEOPLE WITH DIABETES : PERSPECTIVES OF PATIENTS - A CROSS SECTIONAL STUDY

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ABSTRACT

The survey aims to explore the perspectives of cases on dental care for people with diabetes, as it's a critical element of diabetes operation, but numerous people with diabetes may face walls to penetrating dental care. By relating the challenges and openings for enhancement in furnishing dental care for people with diabetes, we hope to enhance the provision of dental care and ameliorate patient issues.

Keywords: *Diabetes mellitus, habitual hyperglycaemia, xerostomia, candidiasis, hypoglycaemia*

INTRODUCTION

Aim:

The study aimed to achieve three objects (1) to estimate the knowledge and mindfulness of diabetic cases of their threat for systemic and oral conditions as complications associated with diabetes, (2) to examine their stations towards maintaining good oral health through proper oral hygiene and regular dental check- ups, and(3) to determine how they came apprehensive of these pitfalls and preventative measures.

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Materials and methods:

The current cross-sectional questionnaire study was carried out among diabetic cases. The study was carried out among 6 diabetic hospitals across Pune. The check was done with “convenience slice” system. The questionnaire consists of 33 questions divided under 4 headlines a) Demographic details. b) Cases’ knowledge about diabetes and its operation. c) cases’ station towards diabetes and its complications. d) dentists practise regarding different types of diabetic cases

Title:

Diabetes mellitus is a bunch of metabolic conditions that make your blood sugar situations high because of problems with insulin. However, your blood sugar situations can go up (hyperglycaemia), If there’s not enough insulin or it doesn’t work duly. In type 1 diabetes, symptoms start snappily and include polyphagia, polydipsia, polyuria, weight loss, perversity (2). rather type 2 diabetes cases may have rotundity, immaculacy, and blurred vision. Gravid diabetes mellitus is defined as any degree of glucose dogmatism that occurs or is first recognised during gestation (3). colourful oral instantiations of diabetes are-

Xerostomia and dry mouth-

It results in inflammation and soreness of the mouth napkins making it gruelling to bite, taste, and swallow

Oral candidiasis-

Candida mock hyphae a crucial index of oral candida infection has been explosively linked to cigarette smoking and poor glycaemic control in diabetic cases (5).

Periodontal complaint-

The link between diabetes and periodontal complaint is bidirectional. Aggressive periodontitis is recognised as sixth serious complication of diabetes (7).

Dental operation considerations

Blood glucose monitoring-

To maintain glycaemic control, it is recommended to keep the HbA1c position below 7. Dieting blood tube situations should be lower than 120mg/ dl and post prandial blood glucose position should be lower than 150mg/ dl.

Antibiotic content-

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Supplemental antibiotic remedy may be necessary especially before dentoalveolar surgery involving mucosa and bone. For surgical interventions similar as gash and drainage, birth and pulpectomy.

Scheduling considerations for Diabetic Dental Cases-

Morning movables rather around 1.5 hours after breakfast and morning meds are recommended for cases who take insulin injections. It is also important not to record movables during lunch breaks or as the last appointment before regale since blood sugar situations can be low.

Operation of implicit complications-

Hypoglycaemia-

The most common complication is hypoglycaemic occasion (10). still, low blood pressure, seizures and indeed death, if left undressed it can lead to unconsciousness.

Salivary gland dysfunction and oral burning-

The function of the salivary glands can indeed have an impact on the onset of burning mouth pattern. It is important to maintain proper oral hydration by using slaver backups, biting sugarless epoxies, and staying doused with water or ice chips (12).

Infections and delayed crack mending-

Crack infection is indeed a major complication in diabetic cases (13). Factors like age, rotundity, malnutrition, and macrovascular and microvascular conditions can collapse to crack infection and delayed crack mending, especially in type II diabetic cases.

Materials and methods:

Materials and Methods: In this study, a total of 220 participants, spanning from the age of 20 to 80 and above, were included. The research was conducted exclusively among patients, comprising 99 males and 121 females. The study encompassed six diabetic hospitals located in Pune, namely, the Diabetic Association of India, Poona Diabetes Centre, Diabetic Unit KEM Hospital, Chellaraj Hospital - Diabetes Care and Multispeciality, and Ranka Diabetes Centre. The survey employed a "convenience sampling" method, with diabetic patients responding to various questions. The research questionnaire's first segment covered demographic information and profession. The second section focused on patients' knowledge of diabetes and its management. The third segment delved into patients' attitudes toward diabetes and its complications. The last set of questions aimed to understand dentists'

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practices concerning different types of diabetic patients. A pilot study with 20 respondents preceded the main study, but their data wasn't included in the analysis. The pilot study demonstrated satisfactory validity with a Cronbach's alpha of 0.804. The sample size was determined using the formula $N = Z^2P(1-P)/d^2$, where N represents the sample size, Z is the standardised normal deviation at a 95% confidence level, 1.96 is the expected prevalence of social media use based on the pilot study, and 5% is the required precision. Thus, a minimum of 220 participants was needed for the study. Data entry was performed using Microsoft Excel, and data analysis was conducted using IBM's SPSS 23.0 software in Chicago, Illinois, United States. The data was presented in tables for statistical reporting.

Discussion:

The primary objective of this study was to synthesize existing evidence regarding the Knowledge, attitudes, and practices of individuals with diabetes in relation to their oral health care. The surveys conducted in this field used diverse questionnaires and methods, potentially compromising the reliability of the studies included in this survey. Moreover, more than half of the studies did not furnish information about the validity of the tools used to assess knowledge, attitudes, and practices. Additionally, almost all the studies relied on convenience sampling, with many failing to report response rates or make comparisons between respondents and non-respondents. In summary, the study's findings reveal that a significant majority of people with diabetes lack awareness of the two-way connection between diabetes and periodontal disease, and they possess limited knowledge of the oral health risks associated with their condition by Yuen HK, Sandberg GE. Notably, knowledge of these risks was linked to better oral health care and practices found by Yuen HK. However, a significant portion of people with diabetes (47.7%) did not receive information on oral health risks or guidance on oral care from their diabetes care providers reported by Bowyer V Mirza KM. This finding mirrors the results of a recent scoping review, which explored the practices of diabetes care providers and found that they generally do not offer oral health guidance in diabetes care settings. The study identifies key barriers faced by diabetes care providers, including insufficient knowledge of the bidirectional relationship between oral health and diabetes, the absence of oral health assessment tools/guidelines, and referral pathways for promoting oral health given by Poudel Picot, lack of perceived dental care necessity, unpleasant dental experiences, and scheduling difficulties deter individuals from seeking dental care reported by Moore PA, Alves C. Despite these obstacles, the review also indicates that individuals with diabetes are more likely to adopt positive health behaviours when informed about the risks and consequences of poor oral health. Patients express an interest in receiving oral health information from diabetes care providers (Kariko ski A). Significantly, 49.5% of people with diabetes recognize that diabetes affects dental health, and 50.5% believe it has a negative impact on overall health. Similarly, just over half (52.7%) of the individuals visited a dentist in the past 12 months. A majority (54.5%) of diabetic patients

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attribute their dental issues primarily to tooth decay and gum disease. Additionally, nearly 57.7% of patients have undergone dental procedures, primarily extractions and root canals. The study identifies several factors contributing to the limited oral health knowledge, attitudes, and behaviours among individuals with diabetes. A key factor is the lack of oral health education and motivation provided to these patients during diabetes care reported by Nacre PD. The study underscores the importance of incorporating oral health education into diabetes patient education, a crucial component of successful diabetes care by Caligiuri R. Such education should encompass good oral hygiene practices, as they play a vital role in preventing gingivitis and controlling advanced periodontal conditions (Peterson PE). Furthermore, it is noteworthy that while diabetes care typically involves a multidisciplinary team comprising general practitioners, endocrinologists, diabetes educators, dietitians, podiatrists, and physiotherapists, dentists are often excluded from this care team, despite the significant impact of poor oral health on diabetes management. Considering these findings, both diabetes care providers and dentists have an excellent opportunity to collaborate and raise awareness among patients with diabetes about their heightened risk of oral health issues, encouraging them to maintain good oral hygiene practices and attend regular dental check-ups. The involvement of dentists in multidisciplinary teams has shown positive outcomes in other clinical areas, such as antenatal care.

Results:

The study involved 220 participants aged between 20 and 80 or older, all of whom were diabetic patients. The gender distribution consisted of 99 males (45%) and 121 females (55%). In terms of profession, there were 40 business owners (18.18%), 13 health professionals (5.90%), 7 farmers (3.18%), and 40 self-employed individuals (18.18%). The questionnaire was divided into three parts. In the first part, assessing patient knowledge about diabetes and its management, it was observed that 47.7% of patients felt that their dentists provided inadequate information on managing dental care ($p=0.085$), with 43.6% of patients believing that their dentists didn't offer sufficient guidance on preventing dental problems. Moreover, 49.5%, 47.7%, and 46.4% of patients felt their dentists did not provide enough information about preventing gum disease, dry mouth, and oral cancer, respectively ($p=0.058-0.182-0.261$). The second part focused on patients' attitudes toward diabetes and its complications, revealing that 47.3% of patients received education on diabetes and dental care from their dentists ($p=0.084$).

Total 220 responses were collected, in which the loftiest number of repliers were of 61- 80 age group(20.45). The conducted study revealed statistical significance with respect to gender where manly repliers were 99(45) and womanish repliers were 121(55). The cross-sectional study also revealed that there are 18.18 repliers who are business possessors.

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Demographic data

Sr.no	Demographic data	Response	Number	Percentage
1.	Gender	Male	99	45 %
		Female	121	55 %
2.	Age	20-40	10	4.54 %
		41-60	40	18.18 %
		61-80	45	20.45 %
		81 and more	5	2.27 %
3.	Profession	Business owners	40	18.18 %
		Health professionals	13	5.90 %
		Farmers	7	3.18 %
		Self employed	40	18.18 %

Knowledge based questions

Sr no	Question	Response	Number	Percentage	Chi square test value, p value
1.	Do you feel that your diabetes management impacts your dental health?	Yes	109	49.5 %	Chi = 7.91, p = 0.041*
		No	20	9.1 %	
		Maybe	37	16.8 %	
		Do not know	54	24.5 %	
2.	Do you feel that there is enough education available on the relationship between diabetes and dental health?	Yes	112	50.9 %	Chi = 8.18, p = 0.031*
		No	31	14.1 %	
		Maybe	37	16.8 %	
		Do not know	40	18.2 %	
3.	Do you feel that your diabetes has impacted your dental health negatively?	Yes	111	50.5 %	Chi = 8.02, p = 0.038*
		No	28	12.7 %	
		Maybe	36	16.4 %	
		Do not know	45	20.5 %	
4.	Have you ever been given specific instructions for dental care due to your diabetes?	Yes	135	61.4 %	Chi = 10.2, p = 0.012*
		No	38	17.3 %	
		Maybe	20	9.1 %	
		Do not know	27	12.3 %	
5.	Have you ever felt that your diabetes was a barrier to receiving quality dental care?	Yes	116	52.7 %	Chi = 8.52, p = 0.04*
		No	38	17.3 %	
		Maybe	30	13.6 %	
		Do not know	36	16.4 %	
6.	Have you ever felt that your dentist gave you inadequate	Yes	61	27.7 %	Chi = 6.68, p = 0.085
		No	105	47.7 %	
		Maybe	29	13.2 %	

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	instructions for managing your dental health as a person with diabetes?	Do not know	25	11.4 %	
7.	Have you ever felt that your dentist did not provide enough information about how to prevent dental problems related to diabetes?	Yes No Do not know Maybe	36 96 38 50	16.4 % 43.6 % 17.3 % 22.7 %	Chi = 5.76, p = 0.162
8.	Have you ever felt that your dentist did not provide enough information about how to manage dental problems related to diabetes?	Yes No Do not know Maybe	61 114 22 23	27.7 % 51.8 % 10 % 10.5 %	Chi = 8.41 p = 0.016*
9.	Have you ever felt that your dentist did not provide enough information about how to prevent gum disease as a person with diabetes?	Yes No Maybe Do not know	39 109 33 39	17.7 % 49.5 % 15 % 17.17 %	Chi = 7.02, p = 0.058
10.	Have you ever felt that your dentist did not provide enough information about how to prevent tooth decay as a person with diabetes?	Yes No Maybe Do not know	49 106 34 31	22.3 % 48.2 % 15.5 % 14.1 %	Chi = 6.87, p = 0.048*
11.	Have you ever felt that your dentist did not provide enough information about how to prevent dry mouth as a person with diabetes?	Yes No Maybe Do not know	38 105 35 42	17.3 % 47.7 % 15.9 % 19.1 %	Chi = 5.58, p = 0.182
12.	Have you ever felt that your dentist did not provide enough information about how to prevent oral infections as a person with diabetes?	Yes No Maybe Do not know	54 115 27 24	24.5 % 52.3 % 12.3 % 10.9 %	Chi = 9.16, p = 0.025*
13.	Have you ever felt that your dentist did not provide enough information about how to prevent tooth	Yes No Maybe Do not know	36 107 37 40	16.4 % 48.6 % 16.8 % 18.2 %	Chi = 6.27, p = 0.071

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	loss as a person with diabetes?				
14.	Have you ever felt that your dentist did not provide enough information about how to prevent bad breath as a person with diabetes?	Yes No Maybe Do not know	51 115 31 23	23.2 % 52.3 % 14.1 % 10.5 %	Chi = 8.47, p = 0.025*
15.	Have you ever felt that your dentist did not provide enough information about how to prevent oral cancer as a person with diabetes?	Yes No Maybe Do not know	35 102 41 42	15.9 % 46.4 % 18.6 % 19.1 %	Chi = 5.89, p = 0.261
16.	In your opinion, how important is it for dentists to have specialized knowledge about diabetes and its effects on dental health?	Very important Somewhat important Not very important Not at all important	127 41 27 25	57.7 % 18.6 % 12.3 % 11.4 %	Chi = 10.32 p = 0.02*

p>0.05 – not significant *p<0.05 – significant **p< 0.001 – highly significant

ATTITUDE BASED QUESTIONS

Sr.no	Question	Response	Number	Percentage	P value, Significance
1.	How satisfied are you with the dental care you have received while managing diabetes?	Very satisfied Satisfied Neutral Dissatisfied Very dissatisfied	125 40 28 21 6	56.8 % 18.2 % 12.7 % 9.5 % 2.7 %	Chi = 10.91, p = 0.013*
2.	How satisfied are you with the communication between your dentist and primary care physician regarding your dental care?	Very satisfied Satisfied Neutral Dissatisfied Very dissatisfied	119 26 36 36 3	54.1 % 11.8 % 16.4 % 16.4 % 1.4 %	Chi = 9.03, p = 0.034*
3.	How knowledgeable do you feel your dentist is about diabetes and its impact on dental health?	Very knowledgeable Somewhat knowledgeable Neutral Somewhat unknowledgeable Very unknowledgeable	133 41 24 14 8	60.5 % 18.6 % 10.9 % 6.4 % 3.6 %	Chi = 11.24, p = 0.007*

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4.	How often do you receive education on dental care and its relationship to diabetes management?	Every 3 months Every 6 months Once a year Never Other (please specify)	55 104 32 18 11	25% 47.3% 14.5% 8.2% 5%	Chi = 6.04, p = 0.084
5.	How comfortable do you feel discussing your diabetes management with your dentist?	Very comfortable Somewhat comfortable Neutral Somewhat uncomfortable Very uncomfortable	115 30 36 35 4	52.3 % 13.6 % 16.4 % 15.9 % 1.8 %	Chi = 7.14, p = 0.031*
6.	How often do you test your blood sugar levels?	Every day Every other day Once a week Never Other (please specify)	42 46 83 20 29	19.1 % 20.9 % 37.7 % 9.1 % 13.2 %	Chi = 4.08, p = 0.317
7.	How often do you experience low blood sugar levels?	Every day Every other day Once a week Never Other (please specify)	24 46 72 40 38	10.9 % 20.9 % 32.7 % 18.2 % 17.3 %	Chi = 3.91, p = 0.041*
8.	How often do you experience high blood sugar levels?	Every day Every other day Once a week Never Other (please specify)	24 46 72 40 38	10.9 % 20.9 % 32.7 % 18.2 % 17.3 %	Chi = 5.213, p = 0.128

p>0.05 – not significant

*p<0.05 – significant

**p< 0.001 – highly significant

Practice based questions

Sr. no	Question	Response	Number	Percentage	Chi square test, p value
1.	How often do you visit your primary care physician for diabetes management?	Every 3 months Every 6 months Once a year Other (please specify)	60 116 19 25	27.3 % 52.7 % 8.6 % 11.4 %	Chi = 8.41, p = 0.013*
2.	Have you ever had a dental procedure (e.g., filling, root canal, extraction) while	Yes No Do not know	127 32 32	57.7 % 14.5 % 14.5 %	Chi = 10.3, p = 0.011*

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	managing diabetes?	May be	29	13.2 %	
3.	Have you ever experienced any oral health problems (e.g., gum disease, tooth decay) while managing diabetes?	Yes No Maybe Do not know	120 33 34 33	54.5 % 15 % 15.5 % 15 %	Chi = 7.91, p = 0.041*
4.	How often do you receive dental cleanings?	Every 6 months Once a year Less than once a year Other (please specify)	130 40 23 27	59.1 % 18.2 % 10.5 % 12.3%	Chi = 11.5, p = 0.003*
5.	Do you feel that your dentist is knowledgeable about diabetes and its impact on dental health?	Yes No Maybe Do not know	109 42 31 38	49.5 % 19.1 % 14.1 % 17.3 %	Chi = 7.05, p = 0.049*
6.	Do you feel that your dentist is equipped to manage your dental care as a person with diabetes?	Yes No Maybe Do not know	128 31 28 33	58.2 % 14.1 % 12.7 % 15 %	Chi = 10.3, p = 0.022*
7.	Have you ever had to modify your dental care routine due to your diabetes?	Yes No Maybe Do not know	109 33 29 49	49.5 % 15 % 13.2 % 22.3 %	Chi = 7.91, p = 0.041*
8.	Have you ever had to reschedule a dental appointment due to a diabetes-related issue?	Yes No Maybe Do not know	132 36 26 26	60 % 16.4 % 11.8 % 11.8 %	Chi = 11.6, p = 0.003*
9.	Have you ever experienced discrimination or stigma from a dentist due to your diabetes?	Yes No Maybe Do not know	123 36 33 28	55.9 % 16.4 % 15 % 12.7 %	Chi = 9.87, p = 0.021*

p>0.05 – not significant *p<0.05 – significant **p< 0.001 – highly significant

Conclusion:

To conclude, understanding the perspectives of dentists and patients on dental care for people with diabetes is crucial for providing effective oral health support. Dentists prioritize preventive measures and educate patients about oral health complications linked to diabetes. Patients, in turn, seek guidance on managing their oral health concerns. By fostering collaboration and communication between dentists and patients, we can ensure that individuals with diabetes receive personalized care and support. This includes regular check-ups, tailored recommendations, and active participation from patients in managing their oral health. By working together, we can promote optimal dental care for people with diabetes and help them maintain a healthy smile.

Having well controlled blood glucose situations is important for infection forestalment and proper mending. At the same time cases are demanded to be made apprehensive of regular oral hygiene

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