

KNOWLEDGE, ATTITUDE AND PRACTICE OF DENTAL PROFESSIONALS TOWARDS DIABETES MELLITUS IN ISLAMABAD DENTAL HOSPITAL

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ABSTRACT

OBJECTIVES

The aim of this study was to determine general dentists and dental students knowledge, attitudes and practices regarding diabetes mellitus, a major public health issue with oral complications.

METHODOLOGY

This cross-sectional study design was conducted in Islamabad dental hospital for three months on House officers and final year BDS students. A convenience sampling technique was used for the sample. A pretested questionnaire was selected from the previous study. After approval of the IRB, the questionnaires were distributed among participants of the research. The descriptive analysis of the collected data was done by using SPSS software version 20.

RESULTS

The overall results of knowledge of dentists towards diabetes scored high (90%), 80% of the respondents had a positive attitude towards diabetes mellitus. Less than half (20%) of the dentists scored poor in the practice of diabetes mellitus, while about three fourth of the respondents had a good score (80%).

CONCLUSION

Dentists in Islamabad dental hospital have good knowledge and practice skills regarding diabetes. The attitude of the dental practitioners in Islamabad dental hospital regarding diabetes is also positive.

KEYWORDS: Knowledge, Attitude, Practice, Dental Professions, Diabetes Mellitus

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INTRODUCTION

Diabetes mellitus is a metabolic disorder

characterized by hypoglycemia or hyperglycemia due to defects in insulin secretion, insulin action or both. Uncontrolled diabetes has been associated with many oral manifestations including bacterial, viral and fungal infections, delayed wound healing and xerostomia resulting in an increased incidence of dental caries. Burning mouth syndrome is also an important manifestation of diabetes.¹ Diabetic neuropathy can produce oral symptoms such as burning, numbness and tingling of the tongue and oral mucosa. If these symptoms are diagnosed early they can be managed but in some severe cases, they cannot be reversed.² Oral wounds in diabetic patients heal with a delay because their vessel walls are thickened and their blood is also

viscous. Delayed wound healing is because of leukocytic dysfunction. Literature shows that mostly abnormal healing occurs in patients with uncontrolled diabetes type 1. One study suggested that patients with type 2 diabetes who take oral hypoglycemic drugs should be treated the same as for non-diabetic patients.³ Nowadays the incidence of diabetes is on the rise thus dentists need to be fully equipped to manage oral manifestations of diabetes.⁴ According to a study conducted by the centers for disease control and prevention in 2014, 27.8% of the US population has undiagnosed diabetes and these studies support the fact that dentists should be a part of the team which diagnoses and prevent diabetes and avoids its complications.⁵ A study concluded that it is important for the dentist to have a good knowledge regarding the medical management of patients with diabetes and to recognize signs and symptoms of uncontrolled or poorly controlled diabetes.⁶ Research on dental hygienists reported a need to increase their knowledge of diabetes as it is required for clinical patient care. It also implied that a variety of educational ways should be considered so that dentists and dental hygienists can help patients with the prevention and management of diabetes.⁷ The dental practitioner should know the type of diabetes, the treatment given for the disease, and glycemic control status (using the glycosylated hemoglobin test) and possible complications of diabetes to treat those patients for dental problems.⁸ The proper training is important to improve the awareness of dentists towards diabetes and in their behavior about addressing diabetes.⁹ Studies have been conducted internationally to assess the knowledge and see the attitudes of dental professionals for the management of dental complications of diabetes and they show a lack of knowledge about diabetes in their study samples.¹⁰ Some studies also show that dental professionals have adequate theoretical knowledge but they lag when it comes to the management of medical emergencies.^{11,12} Diabetes mellitus is a very common disease in Pakistan and its dangers are recognized worldwide. The dentists usually come across these patients for their dental treatment and with the advancement in diagnostic aids dentists will be seeing and treating more patients with diabetes in near future. Hence a dentist needs to be aware of the dental management of the diabetic patient. To date, very little data is available on this topic in Pakistan. This research on final year students and house officers will add to the literature available on this topic and will help to make future interventions

(workshops, symposiums, PBLs) so that dental professionals can provide better care to diabetic patients from the start of their careers for better treatment prognosis.

METHODOLOGY

A descriptive cross-sectional study was conducted. This Cross-sectional study was conducted in Islamabad dental hospital for three months (December 2019 to February 2020). All House officers and final year students working in Islamabad Dental Hospital were included in the study while those who are not willing to participate and incomplete questionnaires were excluded. A convenience sampling technique was used. A pretested questionnaire was selected from the previous study. Some changes were made to the previous questionnaire and the validity and reliability of the questionnaire were tested by doing a pilot survey.¹³ Participation was voluntary. The results of the pilot study were entered and analyzed by IBM-SPSS (version 20) software. The Cronbach's alpha was 0.849. After approval of the Institutional review board, the questionnaires were distributed among participants of the research. The questionnaire has 21 questions out of which 11 aim at knowledge, 5 assess attitude and 5 assess the practice habits. Approximately 15 to 20 minutes were given to fill out the questionnaires. Only completely filled questionnaires were included in the study. The descriptive analysis of the collected data was done by using SPSS software version 20. The responses for each question for attitude and practice was shown in a percentage frequency distribution and the results were graphically depicted. The response for knowledge was shown in percentage as per assessment criteria.

>90% correct answers	Excellent knowledge
50 to 90% correct answers	Good knowledge
<50% correct answers	Poor knowledge

RESULTS

Majority of the dentists (90%) scored high, and 10% showed a high level of knowledge. The majority (80%) of the respondents had a positive attitude towards diabetes mellitus. However, only 15% have attended workshops specially tailored for dental professionals on the management of diabetic patients. (Table 1) Less than half (20%) of the dentists scored poor (20%) in the practice of diabetes mellitus, while about three fourth of the respondents had a good score (80%).

Table 1: Knowledge of Students and House Officers about Diabetes Mellitus

Questions	Responses	Final Year Students	House Officers	Total	%age
Which gender is more affected by diabetes?	Male	16	10	26	32.5%
	Female	24	24	48	60%
	I don't know	04	02	06	7.5%
What is the gold standard investigation for diabetes?	HBA1c	30	30	60	75%
	FBS	13	05	18	22.5%
	OGTT	01	01	02	2.5%
What is the normal value of HBA1c?	<6%	29	24	53	66.3%
	7-10%	11	11	22	27.5%
	>10%	04	01	05	6.2%
Which cytokines are associated with periodontal inflammation among diabetic patients?	Prostaglandins	08	04	12	15%
	Interleukin-1B	14	12	26	32.5%
	Both	22	20	42	52.5%
What oral conditions you would associate with the oral manifestation of diabetes?	Xerostomia	07	13	20	25%
	Dental caries	05	02	07	8.7%
	All of above	32	21	53	66.3%
Does diabetes Mellitus cause oral fungal infections?	Yes	26	26	52	65.0%
	No	13	05	18	22.5%
	I don't know	05	05	10	12.5%
One of the systemic complications of DM is the alteration in wound healing?	Yes	40	36	76	95%
	No	04	0	04	05%
There is a strong genetic influence in acquiring type 2 DM	Yes	25	19	44	55%
	No	12	13	25	31.3%
	I don't know	07	04	11	13.7%
One of the macrovascular complications of diabetes is Retinopathy	Yes	30	28	58	72.5%
	No	13	08	21	26.3%
	I don't know	01	0	01	1.2%
Does periodontal disease worsen glycemic control	Yes	35	20	55	68.7%
	No	06	13	19	23.7%
	I don't know	03	03	06	7.6%
Does poor oral hygiene encourage the growth of oral bacteria	Yes	39	34	73	91.3%
	No	03	01	04	05%
	I don't know	02	01	03	3.7%

Table 2: Attitude and Practice of Students and House Officers about Diabetes Mellitus

Questions	Responses	Final Year Students	House Officers	Total	%age
Attitude					
I feel I have a role as a dentist in the diagnosis of Diabetes Mellitus?	Yes	38	31	69	86.2%
	No	06	05	11	13.7%
Have you attended workshops specially tailored for dental professionals on the management of diabetic patients	Yes	07	05	12	15%
	No	37	31	68	85%
Do you think educating patients with diabetes about oral complications should be a major concern for the dentist?	Yes	38	34	72	90%
	No	06	02	08	10%
Do you advise every patient with diabetes about periodontal risks	Yes	39	28	67	83.7%
	No	05	08	13	16.3%
Do you counsel every patient with diabetes regarding oral hygiene aids?	Yes	35	28	63	78.7%
	No	09	08	17	21.3%
Practice					
Do you have a glucose monitor in your dental setting?	Yes	14	12	26	32.5%
	No	30	24	54	67.5%
Do you perform blood glucose measurements for patients with Diabetes condition	Yes	23	29	52	65%
	No	21	07	28	35%
Have you ever referred a patient to make a Diabetes Mellitus analysis and it was positive?	Yes	24	23	47	58.7%
	No	20	13	33	41.3%
Do you document the diabetic condition in the file?	Yes	32	22	54	67.5%
	No	12	14	26	32.5%
Do you consult with a physician for evaluation of a Diabetic case before treatment?	Yes	24	25	49	61.3%
	No	20	11	31	38.7%

DISCUSSION

The World Dental Federation with the International Diabetes Federation has urged the need to improve the knowledge about the reciprocal link between diabetes and oral health among health professionals.¹⁴ Diabetes is an important risk factor for many oral diseases and conditions. Almost one-third of patients with diabetes are undiagnosed and many of them visit dental offices too.¹⁵ It is estimated that approximately 5 to 20% of all patients seen in dental offices have diabetes.^{16,17} So it is very important to have a basic knowledge of diabetes among dental practitioners as well. The present study was conducted on 80 participants composed final year students and house officers. The sample size was small as compared to the other studies conducted on the same topic like a study conducted by Esmeili and that was because the current study was conducted on students and house officers of a single institute.⁹ Overall the participants had good knowledge about diabetes which is consistent with the results reported by Saxena.¹ The results show that at the undergraduate level the students are taught the basic knowledge about diabetes and are guided well and also because diabetes is also taught in multiple subjects at the undergraduate level. These results are inconsistent with the study of Al-Khabbaz & Al-Shammari and Boyed, who demonstrated a need for enhancing knowledge of dental hygienists about diabetes as it applies to clinical patient care.^{18,7} According to the present study, a good percentage of participants agreed that they should be able to diagnose a diabetic patient and it was their duty to educate patients about the risks and complications of diabetes and they should counsel every diabetic patient about oral hygiene aids. About 85% of the participants reported that they have not attended any seminars and workshops on the management of diabetic patients and that's because they were not arranged in the Hospital. However, Saad et al reported that adequate seminars and workshops are conducted in their hospital in Alexandria Egypt.¹³ The most motivating part of the present research was that the majority of the respondents had a positive attitude regarding patients with Diabetes Mellitus while few dentists showed a neutral attitude toward the subject. This result is not in agreement with Saxena who reported a negative attitude toward the same issue but was in agreement with the study conducted by Myriam.^{12,13} Most of the respondents with good knowledge and attitude also had a good

practice score. Most of the previous researches done on the same topic showed neutral to poor practice scores. This shows that the dentists in Islamabad dental hospital are encouraged and educated to diagnose and treat diabetic dental patients and make appropriate referrals when required. These results are inconsistent with the results of Esmeili and Saad et al.^{9,13} One of the major problems which hinder good practice is the lack of resources. 58.7% of participants agreed that when they referred people for diagnosis of DM, it came positive. This is because of patient resistance and poor education. This is consistent with the research done by Myriam.¹³ A fair amount of practitioner also performs blood glucose measurement before starting a procedure. The overall results show that overall dentists in Islamabad dental hospital have good knowledge, attitude and practice regarding dental patients with diabetes. However, the majority of the dentists included in the survey have not attended any workshop or seminar regarding the awareness of diabetes. This shows that there is a need to arrange workshops and seminars on diabetes, to improve the knowledge and management of diabetic patients further.

LIMITATION

The limitation of the study was that only one center were focused for data collection which makes it less generalizable.

CONCLUSION

Overall dentists and final year dental students in Islamabad dental hospital have good knowledge and practice skills regarding diabetes. The attitude of the dental practitioners in Islamabad dental hospital regarding diabetes is also positive.

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REFERENCES

1. Obulareddy VT, Nagarakanti S, Chava VK. Knowledge, attitudes, and practice behaviors of medical specialists for the relationship between diabetes and periodontal disease: A questionnaire survey. *Journal of family medicine and primary care*. 2018 Jan;7(1):175.
2. Aggarwal A, Gupta A, Sharma P, Pandey

- R, Garg B, Kumar S. Dental management of diabetes mellitus: a review of literature. *J Res Adv Dent* 2018; 7:3:73-7.
3. Khan A, Khan MA, Nasir A comparison of healing of the extraction socket in diabetic vs non-diabetic patients: *J Kyber Collg Dent*. 2017; 7: 3.
 4. Obulareddy VT, Nagarakanti S, Chava VK. Knowledge, attitudes, and practice behaviors of medical specialists for the relationship between diabetes and periodontal disease: A questionnaire survey. *J Fam Med Prim Care Rev*. 2018;7(1):175-78.
 5. Shimpi N, Schroeder D, Kilsdonk J, Chyou PH, Glurich I. Assessment of dental provider's knowledge, behavior and attitude towards incorporating chairside screening: a pilot study. *J Den Oral Care*. 2016; 2:102.
 6. Lupi SM, Pascadopoli M, Maiorani C, Preda C, Trapani B, Chiesa A, Esposito F, Scribante A, Butera A. Oral Hygiene Practice among Hospitalized Patients: An Assessment by Dental Hygiene Students. *In Healthcare* 2022; 10(1):115
 7. Asma'a AF, Alsalhani AB, Idrees MM, Alshehri MA, Nassani MZ, Kujan OB. Knowledge, attitudes, and practice behavior of dental hygienists regarding the impact of systemic diseases on oral health. *Saudi Medical Journal*. 2018;39(11):1139.
 8. Singh V, Gauba K, Goyal A, Dayal D, Verma S, Prasad GS. Effect of an Oral Health Preventive Protocol on Salivary Parameters and Gingival Health of Children with Type 1 Diabetes. *Int J Clinical Pediatr Dent*. 2021; 14(1):109-14.
 9. Tantipoj C, Sirichanyaphong T, Nuntachurat J, Ruetaijetjaroen K, Hiransuthikul N, Pujareem P, Fuangtharnthip P, Khovichunkit SO. Dentists' Attitudes toward Diabetes Mellitus Screening in Thai Dental Clinics. *International Journal of Environmental Research and Public Health*. 2022 Mar 11;19(6):3341.
 10. Wali A, Siddiqui TM, Hameed HA, Kath H. Knowledge, attitude, practice of dental surgeons regarding dental radiographs in pregnant women in the city of Karachi. *In J Dent Res*.2017; 2:68-72.
 11. Nivashini GSV, Kumar, MP. Knowledge and awareness among undergraduate dental students regarding oral health of diabetes mellitus patients. *Drug Invention Today*. 2018; 10:464-70.
 12. Saxena K, Sharma ML, Vijay B, Dhillon M. Knowledge, Attitude and Practice assessment of dental professionals towards diabetes: a cross-sectional study. *J Dent Specialities*. 2016; 4: 113-8.
 13. Saad MA, Saleh MA, Essam EW. Knowledge, attitude, and reported practices of a group of ministry of health dentists towards patients with diabetes mellitus in Alexandria, Egypt. *Alex Dent J*. 2019; 1: 24-31.
 14. Forbes K, Thomson WM, Kunzel C, Lalla E, Lamster IB: Management of patients with diabetes by general dentists in New Zealand. *J Periodontol* 2008; 79:1401–8.
 15. Qazi N, Shah SN. Knowledge, Attitude and Practice of Dentists Regarding Cross Infection in Dental Teaching Hospitals of Peshawar. *Journal of Gandhara Medical and Dental Science*. 2016 Mar 1;2(2):3-8.
 16. Saxena K, Sharma ML, Vijay B, Dhillon M. Knowledge, Attitude and Practice assessment of dental professionals towards diabetes: a cross sectional study. *J Dent Specialities*. 2016 Dec 15;4(2):113-8.
 17. Siddiqi KM, Baig MZ, Awan MJ, Sahibzada HA, Akhtar A. Pattern of medical conditions among patients attending oral and maxillofacial surgery over a period of one year. *J Islamabad Med Dent Coll*. 2016;5(1):26-9.
 18. Zainal Abidin Z, Zainuren ZA, Noor E, Mohd Nor NS, Mohd Saffian S, Abdul Halim R. Periodontal health status of children and adolescents with diabetes mellitus: a systematic review and meta-analysis. *Australian dental journal*. 2021 Mar;66:S15-26.

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