

# Impact of Demographic Factors on Oral Health Knowledge and Attitude of patients with Type II Diabetes mellitus Visiting A THQ Hospital in Punjab, Pakistan

FARHAN RIAZ<sup>1</sup>, AFIFA EHSAN<sup>2</sup>, ALI RAZA<sup>3</sup>, UMER ABDULLAH<sup>4</sup>, MUHAMMAD MUTAHIR MEHDI<sup>5</sup>, EJAZ HUSSAIN SAHU<sup>6</sup>

<sup>1</sup>Department of Community Dentistry, Faryal Dental College, Lahore, Pakistan.

<sup>2</sup>Associate Professor & Head, Department Of Oral Biology, Faryal Dental College, Lahore.

<sup>3</sup>University of Health Sciences, Lahore, Pakistan.

<sup>4</sup>Department of Oral Pathology, Multan Medical & Dental College, Lahore, Pakistan

<sup>5</sup>Department of Oral Biology, Nishtar Institute of Dentistry, Multan, Pakistan

<sup>6</sup>Department of Community Dentistry, Multan Medical & Dental College, Lahore, Pakistan.

Correspondence to: Dr. AfifaEhsan, Email: [afifaehsan@gmail.com](mailto:afifaehsan@gmail.com), Cell: 00923004668379

## ABSTRACT

**Aim:** Patients suffering from Diabetes Mellitus have a larger possibility of developing oral diseases furthermore; those who have uncontrolled and long-duration of Diabetes Mellitus are also at a greater risk for acquiring periodontal disorders. The present study intended to investigate the association of oral fitness knowledge and attitude with different demographic factors in patients with Type II Diabetes Mellitus visiting a secondary care provincial hospital in Sargodha, Pakistan.

**Methods:** The present study was a cross-sectional study piloted at a secondary care provincial hospital in District Sargodha which comprised 180 patients suffering from Type II Diabetes Mellitus. Information was collected using a systematized questionnaire which was handed out to study participants visiting the outpatient department of the hospital.

**Results:** Oral health knowledge of the study participants were cross-tabulated with socio-economic and demographic factors and a significant association was seen with gender ( $P \leq 0.001$ ), educational status ( $P \leq 0.0001$ ), monthly income ( $P \leq 0.002$ ), and marital status ( $P \leq 0.001$ ). In the present study, 26% of males and 18% of females had adequate knowledge regarding oral health. Advanced levels of learning and income also transpired to have a strong association with oral health awareness and attitude ( $P \leq 0.01$ ).

**Conclusions:** Results of the present study suggest that oral well-being knowledge and attitude among patients with Type II Diabetes Mellitus were strongly associated in conjunction with gender, higher levels of education, and income. Based on these outcomes, communal-oriented oral well-being campaigns are indispensable to navigating the standard of living of patients with Type II Diabetes Mellitus.

**Keywords:** Dental, Diabetes Mellitus, Knowledge, Oral Health, Oral complications, Type II Diabetes Mellitus.

## INTRODUCTION

Diabetes mellitus is an assemblage of metabolic conditions brought about as a result of the insufficiency of insulin secretion, resistance, or both.<sup>1</sup> It enhances the burden of preventable diseases and precedes financial shortfalls that are an outcome of the excessive cost of treatment.<sup>2</sup> In South Asia, the greater part of individuals survive on or beneath the destitution line and endure scarcity of healthcare amenities as well as the non-availability of nationwide well-being programs and health protection for underprivileged residents. Consequently, individuals belonging to low-income groups are diagnosed late and are at advanced risk of acute and chronic complications.<sup>3</sup> Type II Diabetes Mellitus is preceded by an extended phase of irregular glycaemic control and is part of the metabolic syndrome linked to hypertension, dyslipidemia, and hyperglycemia. This disease has a deep-seated genetic etiology than Type I Diabetes Mellitus. Environmental factors for instance diet, exercise, obesity, and smoking affect the development of Type II Diabetes Mellitus.<sup>4</sup>

The relationship between periodontal complaints and different systemic ailments has also amplified rapidly. One such association is observed between periodontal disease and diabetes mellitus.<sup>5-7</sup> An assortment of factors modify periodontal health but educating patients with consistent appointments with dental practitioners and qualified feedback seems to be the utmost prosperous methodologies in averting periodontal degeneration and disease development.<sup>8-9</sup> World Health Organization (WHO) has also asserted that individual attention is one of the greatest significant principal health care approaches to attain the objective of "Health for all". Oral ailments are a foremost communal health apprehension due to their extraordinary rate of frequency and consequences on the quality of life of people.<sup>10</sup>

An enormous percentage of oral diseases can be prevented on individual and public levels so long as oral well-being-related education consequently refines oral fitness attitudes among the

overall residents. Oral health knowledge has also been seen to be a requirement for an oral health-associated attitude.<sup>11</sup> Pakistan is an emerging nation suffering an unwarranted load of this ailment. The consideration of accessible perceptions, attitudes, and routines is important for the provision of the best possible health.<sup>12</sup> The existing study aimed to assess the association of oral health knowledge and attitude with different demographic factors in patients with Type II Diabetes Mellitus at a secondary care provincial hospital in Sargodha, Pakistan.

## PATIENTS AND METHODS

The current study was a cross-sectional descriptive analysis piloted from February 2014 to August 2014 and a convenience sampling method was employed. A former endorsement was managed by the Executive District Health Officer (EDO) and Medical Superintendent (MS) of Tehsil Head Quarter (THQ) Hospital in Sargodha, Pakistan intended for the registration of participants. Ethical approval was correspondingly sought from the Institutional Review Board (IRB), Health Services Academy (HSA) letter dated January 1, 2014.

Information was gathered using a systematized questionnaire developed by the principal investigator. The tool was pre-tested and necessary changes were made. The questionnaire was developed in English and later on translated into Urdu. This study was carried out in THQ hospital Sillanwali, District Sargodha having a sample of 180 patients with Type II Diabetes Mellitus. Patients were briefed concerning the objectives of the investigation and vocal along with written permission was obtained from eager participants. The questionnaire was dispensed to participants visiting Out-Patient Departments at THQ Hospital, Sillanwali. Apart from collecting data, study participants were assessed for their oral fitness information and approach. Statistics were recorded into SPSS 20 for statistical analysis and the significance level was kept at  $P \leq 0.05$ .

**RESULTS**

In the present research, oral health knowledge was cross-tabulated with socio-economic and demographic factors, and a significant association was found (Table I). Males had more oral health knowledge than females and the educational degree was also perceived to be directly related to oral wellbeing knowledge as respondents with higher levels of education were found to score higher on the questionnaire. Income status also had a strong association with oral health knowledge and it was seen that all unmarried patients participating in the study had adequate oral health knowledge.

The relationship between the oral health understanding and approach of respondents and the source of data of patients with Type II Diabetes Mellitus was also significantly associated (Table II). The respondents who obtained information from Physicians and dentists had greater scores on the questionnaire while those who obtained information from television and the community had a low score on the oral health information and approach questionnaire.

The oral well-being attitude in patients with Type II Diabetes Mellitus was cross-tabulated with socio-economic and demographic factors and a significant association was found (Table III). The percentage of male patients having a good oral health attitude was seen to be more than female patients and it was also seen that educational level was directly related to the oral fitness attitude of patients with Type II Diabetes Mellitus; those who had acquired higher educational levels also had good oral health attitudes. The income status also had a strong relationship with oral health attitudes as patients with good income status had good oral health attitudes. Similarly, all unmarried patients likewise had good oral health attitudes.

The oral health understanding and attitude in patients with Type II Diabetes Mellitus were cross-tabulated with the duration of diabetes and a significant association was obtained (Table IV). Patients who had less duration of diabetes had more oral health knowledge and better attitudes than those who had a longer duration of diabetes. Duration of disease was not directly related to oral health knowledge but other factors like education, and age, affected this result.

Table I: Oral Health Knowledge, Socio-Economic & Demographic Factors

	Oral Health Knowledge					P-Value
	Categories	Adequate		Inadequate		
		Frequency	%age	Frequency	%age	
Gender	Male Female	47 32	26% 18%	29 72	16% 40%	0.001*
Educational Status	Illiterate Primary Matric Graduation	4 28 39 8	2% 15% 22% 4%	44 48 9 0	25% 27% 5%	0.0001*
Monthly Income	<Rs.10000/- Rs.10000 to 20000/- >Rs.20000/-	16 35 28	9% 19% 16%	60 25 16	34% 13% 9%	0.002*
Marital Status	Married Unmarried	63 16	35% 9%	101 0	56% 0%	0.001*

\*P is significant at the 0.05 level

Table II: Oral Health Knowledge, Attitude & Source Of Information

	Oral Health Knowledge & Attitude					P-value
	Categories	Adequate		Inadequate		
		Frequency	% age	Frequency	%age	
Source Of Information	Television Physician Community Dentist	8 47 20 4	4% 27% 11% 2%	12 37 52 0	7% 20% 29%	0.001*

\*P is significant at the 0.05 level

Table III: Oral Health Attitude, Socio-Economic & Demographic Factors

	Oral Health Attitude					P-value
	Categories	Good		Bad		
		Frequency	%age	Frequency	%age	
Gender	Male Female	48 20	27% 11%	28 84	15% 47%	0.001*
Educational Status	Illiterate Primary Matric Graduation	8 20 32 8	4% 11% 18% 4%	40 56 16 0	23% 31% 9%	0.001*
Monthly Income	<Rs.10000/- Rs.10000 To 20000/- >Rs.20000/-	12 28 28	7% 15% 15%	64 32 16	36% 18% 9%	0.001*
Marital Status	Married Unmarried	52 16	29% 9%	112 0	62% 0%	0.001*

\*P is significant at the 0.05 level

Table IV: Oral Health Knowledge & Duration Of Diabetes

	Oral Health Knowledge					P-value
	Categories	Adequate		Inadequate		
		Frequency	%age	Frequency	%age	
Duration of Diabetes	<5years 5yrs to 10yrs >10years	48 27 4	27% 15% 2%	24 37 40	13% 21% 22%	0.001*
	Oral Health Attitude					P-value
	Categories	Good		Bad		
		Frequency	%age	Frequency	%age	
	<5years 5yrs to 10yrs >10years	44 20 4	27% 15% 2%	28 44 40	13% 21% 22%	0.0001*

\*P is significant at the 0.05 level

## DISCUSSION

This hospital-based study was executed to recognize and associate different aspects influencing the oral well-being understanding and approaches of patients with Type II Diabetes Mellitus visiting a secondary care provincial hospital. It has been seen that patients fulfilled improved oral health care routines when educated and positively reinforced. Patients should be encouraged to seek preventive dental care and must be counseled that one is susceptible to dental diseases which can tend to be serious and that dental treatment is valuable to prevent these diseases. This information endeavors to transform attitudes by modifying the knowledge and perceptions of study participants. Patients with Type II Diabetes Mellitus should have consistent recall appointments since individual attention to the patient and consultation with the dental practitioner is indispensable to improving oral fitness. Knowledge and attitude of every individual in health care are essential.<sup>13-14</sup> Results of the present study disclosed that greater than half of the study participants did not receive satisfactory oral health information connected to Diabetes Mellitus. These outcomes are coherent with investigations piloted globally comprising those in the developed nations.<sup>13,15</sup>

In the present study, 44% of patients with Type II Diabetes Mellitus had satisfactory oral health information while 56% had insufficient oral health understanding based on their scores on the questionnaire. Likewise, only 38% of patients displayed respectable oral health attitudes, while 62% demonstrated opposing oral health attitudes measured on the standardized questionnaire. This showed that although people knew about the dental complications of diabetes, they still presented with adverse oral health attitudes. Study participants with academic degrees had greater awareness of oral health and a statistically significant relationship was seen. This matched with the findings of Ayanbadejo et al. who reported statistically significant differences in oral health knowledge of participants in low-skilled and highly-skilled workers of Diabetes Mellitus patients.<sup>16</sup>

A statistically significant association was also seen to exist between oral health attitudes and educational levels of the study participants which was found to agree with findings described by Yuen et al. as well as Karikoski et al. in which participants with advanced levels of learning were found to be extra probable to practice good oral fitness attitudes.<sup>15,17</sup> Yuen et al. also reported that 47% of their research participants developed a satisfactory understanding of the oral problems of Diabetes Mellitus however; in research piloted in Jordan, 48% of research participants were aware of the liability of Diabetes Mellitus to predispose to periodontal complications.<sup>15,18</sup> The pervasiveness of oral well-being approaches in the research participants of the current investigation also agrees with earlier investigations in which comparable amounts of patients with Type II Diabetes Mellitus have been observed to demonstrate favorable as well as unpleasant oral health approaches.<sup>19</sup>

Significant associations were also seen concerning the period of disease and knowledge as well as attitude scores of patients with Type II Diabetes Mellitus. Research participants whose disease period was briefer than five years had greater oral health knowledge, which could be clarified by the higher educational level of that group. A statistically significant relationship was also observed between oral health understanding and the gender of the participants. In the current study, males had greater oral health awareness than females which was antagonistic to the findings of Karikoski et al. and Al-Khabbaz et al.<sup>17,19</sup> These studies showed an advanced level of oral health understanding among the female participants. This can be described based on general dissimilarities between the samples. The present study was conducted in a comparatively retrograde part of Punjab where low female literacy and deficiency of empowerment predispose to hurdles to healthcare access and understanding. A

similar statistically significant association was established between oral health attitudes and the gender of patients in this study.<sup>17,19</sup>

In the current study, 47% of study participants conveyed getting information regarding diabetes mellitus and its complications from their general practitioner, 40% from their neighborhood, and 11% from television. Conversely, a study piloted in Multan showed that 41.7% of participants, received data on the subject of oral health predominantly from the mass media while 46.2% received it from communal followers.<sup>20</sup> This dissimilarity could also be accredited to variances in the socio-demographic aspects of patients. In a study by Habashneh et al, 50% of study participants described getting oral health information from the small screen and the internet.<sup>21</sup> In an alternative paper by Allen et al., 50% of the study participants described getting maximum oral health information from their dental practitioners.<sup>22</sup> Dissimilarities detected in the cause of material in diverse reports may perhaps be owing to variances in health instruction amenities as well as accessibility. This may furthermore be ascribed to changes in the learning amount of research participants. Results of the current analysis furthermore indicate that the consumption of accessible dental facilities transpire to be primarily for emergency discomfort liberation and infrequently for regular oral health maintenance.

## CONCLUSION AND RECOMMENDATIONS

The consequences of the present study propose that oral health information and attitude of patients with Type II Diabetes Mellitus were strongly associated with gender and higher levels of education and income. Medical specialists can apprise patients with Type II Diabetes Mellitus regarding the oral manifestations and complications of Diabetes Mellitus and urge suitable oral well-being attitudes. They should be responsible for appropriate oral guidance as well as direct apprehensions linked to oral well-being to dental practitioners.

**Limitations:** The most important limitation of the present study was the practice of a suitable sampling method as a result of source boundaries, detaining the generalization of study results. Furthermore, as the appraisals of certain study parameters were narration centered they could have endured limits in recollection.

**Conflict of interest:** None

**Grant Support & Financial Disclosures:** None

## REFERENCES

1. Daneman D. Type 1 diabetes. *The Lancet*. 2006 Mar 11;367(9513):847-58.
2. Nishitar S, Faruqui AM, Mattu MA, Mohamud KB, Ahmed A. The National Action Plan for the Prevention and Control of Non-communicable Diseases and Health Promotion in Pakistan--Cardiovascular diseases. *JPMA. The Journal of the Pakistan Medical Association*. 2004 Dec 1;54(12 Suppl 3):S14-25.
3. Caro JJ, Ward AJ, O'Brien JA. Lifetime costs of complications resulting from type 2 diabetes in the US. *Diabetes care*. 2002 Mar 1;25(3):476-81.
4. Stumvoll M, Goldstein BJ, Van Haeften TW. Type 2 diabetes: principles of pathogenesis and therapy. *The Lancet*. 2005 Apr 9;365(9467):1333-46.
5. Mercado FB, Marshall RI, Bartold PM. Inter-relationships between rheumatoid arthritis and periodontal disease: A review. *Journal of clinical periodontology*. 2003 Sep;30(9):761-72.
6. Abou-Raya A, Abou-Raya S, Abu-Elkheir H. Periodontal disease and rheumatoid arthritis: is there a link?. *Scandinavian journal of rheumatology*. 2005 Jan 1;34(5):408-10.
7. Bartold PM, Marshall RI, Haynes DR. Periodontitis and rheumatoid arthritis: a review. *Journal of periodontology*. 2005 Nov;76:2066-74.
8. Loe H. Oral hygiene in the prevention of caries and periodontal disease. *International dental journal*. 2000 Jun;50(3):129-39.
9. Glavind L. The scientific basis for oral health recommendation. *Promotion of self care in oral health*. 1986:77-93.
10. World Health Organization. *Self care for health*.
11. Kegeles SS. Some motives for seeking preventive dental care. *The Journal of the American Dental Association*. 1963 Jul 1;67(1):90-8.

12. Ehsan A, Riaz F, Raza A, Sahu EH, Rathore E, Abdullah U. Knowledge and Awareness of Oral Health in Type 2 Diabetes Mellitus Patients Visiting A THQ Hospital in Punjab, Pakistan. *Pakistan Journal of Medical & Health Sciences*. 2022 Jun 1;16(05):227-.
13. MasoodMirza K, Khan AA, Ali MM, Chaudhry S. Oral health knowledge, attitude, and practices and sources of information for diabetic patients in Lahore, Pakistan. *Diabetes care*. 2007 Dec 1;30(12):3046-7.
14. Wahid A, Chaudhry S, Ehsan A, Butt S, Khan AA. Bidirectional relationship between chronic kidney disease & periodontal disease. *Pakistan journal of medical sciences*. 2013 Jan;29(1):211.
15. Yuen HK, Wolf BJ, Bandyopadhyay D, Magruder KM, Salinas CF, London SD. Oral health knowledge and behavior among adults with diabetes. *Diabetes research and clinical practice*. 2009 Dec 1;86(3):239-46.
16. Ayanbadejo PO, Savage KO, Jeboda SO. Awareness of periodontal diseases amongst Nigerian diabetics. *Odonto-stomatologieTropicale=Tropical Dental Journal*. 2004 Mar 1;27(105):13-6.
17. Karikoski A, Ilanne-Parikka P, Murtomaa H. Oral self-care among adults with diabetes in Finland. *Community dentistry and oral epidemiology*. 2002 Jun;30(3):216-23.
18. Jansson H, Lindholm E, Lindh C, Groop L, Bratthall G. Type 2 diabetes and risk for periodontal disease: a role for dental health awareness. *Journal of clinical periodontology*. 2006 Jun;33(6):408-14.
19. Al-Khabbaz AK, Al-Shammari KF, Al-Saleh NA. Knowledge about the association between periodontal diseases and diabetes mellitus: contrasting dentists and physicians. *Journal of periodontology*. 2011 Mar;82(3):360-6.
20. Parveen N, Ahmed B. Oro dental health: Awareness and practices. *Journal of University Medical & Dental College*. 2011;2(2):5-10.
21. Al Habashneh R, Khader Y, Hammad MM, Almuradi M. Knowledge and awareness about diabetes and periodontal health among Jordanians. *Journal of diabetes and its complications*. 2010 Nov 1;24(6):409-14.
22. Allen EM, Ziada HM, O'halloran D, Clerehugh V, Allen PF. Attitudes, awareness and oral health-related quality of life in patients with diabetes. *Journal of oral rehabilitation*. 2008 Mar;35(3):218-23.