



Oral Health Related Quality of Life in Diabetic Patients

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Abstract

History and objectives. Patients with diabetes have a higher chance of developing oral problems, and their management and treatment options may be impacted by their oral health-related quality of life (OHRQL). The current study's objective was to identify OHRQL and related factors in diabetic individuals.

materials and methods. In this study, 200 patients were drawn from the Hospital's diabetic clinic. Using the Oral Health Impact Profile Questionnaire, OHRQL was evaluated (OHIP-20). Another questionnaire was also created, asking participants about their awareness of oral consequences of diabetes and dental hygiene practises. OHRQL was given the ratings of poor and excellent. At $P = 0.05$, data were analysed using logistic regression.

Results. Among the diabetic individuals evaluated, 78 % fell into the excellent OHRQL category, whereas 23 % fell into the poor category. This quality was significantly correlated with age, knowledge of diabetes oral complications, educational level, being referred to a dentist by a doctor, brushing frequency.--

Conclusion. Diabetes mellitus had no detrimental effects on the examined sample's oral health-related quality of life.

Keywords: Diabetes, diabetics, oral health related quality of life

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Introduction

Diabetes is a metabolic disorder that gradually develops and is characterised by a shortage of either insulin synthesis, insulin activity, or both. Hyperglycemia is one of the symptoms of diabetes.¹ Epidemiologic studies estimate an increase in sickness prevalence from 4% in 1995 to 5.4% in 2025. Along with other systemic side effects, diabetes patients frequently have oral issues such as xerostomia, taste impairment, oral candidiasis, oral lichen planus,³ and periodontal disease.⁴ People in poverty or those with uncontrolled diabetes are more susceptible to periodontal disease.^{5,6} Periodontal disease may have a deleterious impact on the metabolic control of diabetes.^{7,8}

Given the link between diabetes and dental issues, understanding oral health-related quality of life (OHRQL) in diabetic patients is essential. "Quality of life is described as an individual's judgements of their place in life in relation to their ambitions, aspirations, standards, and concerns, as well as the culture and value system in which they live," the World Health Organization (WHO) explains.⁹ Numerous studies have suggested that dental issues may have an effect on one's quality of life.^{10–12}, however the effect on those with diabetes hasn't been well researched. OHRQL was not significantly affected by diabetes in the population Allen et al.¹³ looked at. In their case-control study, Sandberg et al. came to the same result.¹⁴ Additionally, there is less data to suggest that people with diabetes are aware of their increased risk for periodontal disease. According to a study by Allen et al.¹³, only 33% of diabetic patients were aware of their increased risk for periodontal disease. Sandberg et al. study¹⁴ revealed that 17% of the participants were aware. Studies on diabetes patients' well-being and dental health issues may have an impact on their treatment and, ultimately, raise their level of life satisfaction. The objective of the current

study is to discover OHRQL and the factors that influence it in people with diabetes.

Materials and Methods

By using convenience sampling, patients attending the diabetes clinic at Mustafa Khomeini Hospital in Tehran, Iran, were chosen as participants in this analytical cross-sectional study in 2011. In this study, 200 diabetic individuals with well-controlled blood sugar levels (HbA1c < 8) were included. The chosen individuals were being treated for diabetes and had regular follow-up appointments. All participants provided their explicit written agreement to take part in the study.

Age, gender, educational level, type of diabetes, length of time from diagnosis, and smoking habit were all collected as general information about the subjects. The participants were asked about their oral health practises, including how frequently they brushed their teeth, how often they went to the dentist, and whether or not their doctor had recommended them. OHRQL was assessed using the standard oral health impact profile (OHIP-20) questionnaire, which is a condensed form of OHIP.^{15,16} Twenty multiple-choice questions on seven conceptual categories, including functional constraint, pain, physiological discomfort, physical disability, psychological disability, social impairment, and handicap, made up the questionnaire. The responses were divided into 5 groups based on the problem's presence or absence and severity, and each category was given a score from 1 to 5 as follows: never (the problem was never encountered) = 5, seldom = 4, sometimes = 3, most of the time = 2, and always (the problem always existed) = 1. Each person's overall score was determined by adding their individual scores for each question, which may range from 20 to 100. (The highest and the lowest possible scores were 100 and 20, respectively). Lower scores signified that the respondent had some degree of oral health-related concerns, whereas a total score of 100



indicated absence of difficulty or problem. OHRQL scores of 20 to 59 were classified as poor, and values of 60 to 100 as good.

In addition to the OHIP-20, the participants also completed a questionnaire that tested their knowledge of oral complications of diabetes and had both descriptive and multiple-choice items. The validity of this questionnaire and the responses to its questions were evaluated using the Delphi technique, in which eight leading periodontists agreed on every item and assigned a grade to it. Both surveys were written in Persian.

Analytical Statistics

For qualitative and quantitative variables, respectively, frequency (%) and mean (SD) were used to summarise the data. The relationship between OHRQL and the factors was evaluated using logistic regression analysis. The significance threshold was established at p 0.05. SPSS version 15 was used for all analyses (SPSS Inc., Chicago, USA).

Results

This survey included 200 diabetes patients with a mean age of 51.1 years, made up of 80 males and 120 women. Table 1 provides the frequency of the demographic factors evaluated in the study sample.

Table 1

Socio-demographic data and dental history of participants

Variable	classification	frequency
Age	50 years old and less	50
	More than 50 years old	150
Sex	Male	80
	female	120
Educational level	No academic	120
	academic	80
Smoking status	Smoker	90
	Non smoker	110
Knowledge	Good	65
	low	135
Type of diabetes	1	9
	2	140
Duration of disease	Lower than 10 years	100
	10 years and more	100
Cause of tooth extraction	Mobility	2
	caries	70
	Mobility and caries	90
	No missing tooth	38
Frequency of brushing	No brushing	100
	Once a day	50
	Twice a day	50
Referring for dental visit by physician	Yes	120
	No	80
Frequency of dental visits	G1 [§]	150
	G2 [§]	50



In terms of life satisfaction, the findings showed that 45 patients had poor OHRQL, whereas 155 patients had high OHRQL.

OHRQL was not shown to be significantly correlated with gender, smoking behaviour, type of diabetes, or frequency of dental visits. However, OHRQL was strongly correlated with age (P 0.05 in all instances; Table 2), understanding of the relationship between diabetes and oral issues, educational level, being recommended for dental appointments by their doctors, frequency of brushing, and duration of diabetes diagnosis.

Table 2

The correlation between OHRQL and variables.

Variables		OHRQL		OR	P value
		Good	Low	95%CI	
		N = 155	n = 45		
Gender	Female	90	25	0.98	0.2
	Male	65	20		
Age	50 years old and less	55	10	3.34	0.00
	More than 50	100	35		
Knowledge	Good	65	1	11.22	0.001
	Low	90	44		
Educational level	No academic	105	40	15.22	0.00
	academic	50	5		
Type of diabetes	1	10	5	0.88	0.56
	2	110	30		
Smoking status	Smoker	74	27	1.64	0.38
	Non Smoker	81	18		
Being referred for dental visit	yes	115	19	2.56	0.001
	no	45	26		
Frequency of brushing	Once and more	90	5	8.34	<0.001
	No brushing	65	40		
Frequency of dental visits	G1 [§]	130	35	2.11	0.345
	G2 ^{§§}	25	10		
Duration of disease	<10 years	110	15	4.45	0.001
	≥10 years	45	30		

Odds ratios (OR) showed that diabetic individuals who had poor oral hygiene, lower educational level and inadequate understanding of oral symptoms of diabetes were much more likely to have low OHRQL. They were also more likely to have poor OHRQL if they were 50 years of age or older had diabetes for longer than 10 years and had not been recommended to see a dentist by their doctor (Table 2).

Discussion

Numerous research have been done on the quality of life of diabetes patients, but very few have assessed OHRQL. The OHIP-20 questionnaire was used in the current survey to assess OHRQL. The findings showed that the majority of diabetes patients' OHRQL (77.5%) fell into the "good" category. Therefore, it appears that these patients' OHRQL has not been negatively impacted by oral diabetic problems. This is consistent with a research done on 101 diabetic individuals by Allen et al.¹³. Furthermore, Sandberg et al. 14



showed that patients in both research groups were content with their dental health in their case-control study on 204 Swedish diabetes and non-diabetic patients using the SF-36 questionnaire (Short Form General Health Survey Measure; Ware-Steward). Furthermore, Sandberg and Wikblad¹² revealed that although general health-related quality of life (HRQL) was equivalent in both research groups, the non-diabetic persons showed a superior health status in comparison to the diabetes group in a different study with the same design and sample size. The low HRQL status was caused in part by oral factors, such as xerostomia.

The findings of the current study revealed that while factors like sex, type of diabetes, smoking, and frequency of dental visits did not significantly affect OHRQL, other factors like age, education level, frequency of brushing, duration of diabetes, and being referred to a dentist by a doctor did have some influence on OHRQL scores. There aren't many studies on how these characteristics affect OHRQL, although several studies on general quality of life have produced contradictory findings in this area. Age, sex, ethnicity, socioeconomic status, amount of education, and income have not been found to specifically affect diabetic HRQL, according to a review by Wandell¹⁷. A research including 699 diabetes patients found that younger, male, and more highly educated individuals had a greater quality of life.¹⁸ Another study conducted on 1070 type 1 diabetes individuals found that HRQL declined with age. In the current study, 19 patients who brushed once a day or more had superior OHRQL compared to patients who brushed less frequently, which is consistent with the findings of Sandberg et al.¹⁴ Additionally, individuals who had their doctors recommend them to a dentist reported having strong OHRQL. These results may represent the impact of dental care and oral health interventions on diabetes patients' improved OHRQL. In our survey, 51.5% of participants

said they brushed their teeth once or twice a day. More than 90% of patients in Sandberg et al. survey¹⁴, however, reported cleaning their teeth every day. In the research by Karikoski et al. on Finnish diabetics,²⁰ 38% of the 258 participants said they brushed more than once a day, 44% said they brushed once a day, and 17% said they brushed less than once a day.

Another factor taken into account in the current study is doctors referring diabetes patients to dentists. In comparison to the 16% reported by Karikoski et al., 71% of our patients received a referral.²⁰ Additionally, there was a connection between patients' OHRQL and their knowledge of oral problems of diabetes. 45.8% of the 155 diabetic patients with good OHRQL who were surveyed fell into the "good" category for subject knowledge. However, only 4.4% of the 45 patients with poor OHRQL were categorised as having high knowledge.

Although this study found that diabetes patients had a high oral health-related quality of life, limitations should be taken into account when interpreting the findings. First off, there was no clinical examination of the patients, and the conclusions were solely based on the data from the questionnaires. Second, because only individuals who were referred to one hospital were studied, these findings cannot be generalised to other diabetes patients. Additionally, a number of biases may have an impact on the outcomes of questionnaire-based surveys. For instance, it appears that patients often respond to queries with responses that look more logical. According to the survey's findings, diabetes mellitus does not appear to have a negative impact on oral health-related quality of life (OHRQL); nonetheless, there may be a relationship between specific factors and OHRQL. It appears that doctors and dentists have a significant impact on diabetes patients' understanding of oral issues and how these affect their quality of life. A dentist referral is



also suggested as a possible component of the diabetes treatment plan.

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