

# Diabetic Patients Knowledge, Attitude and Practice toward Oral Health

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## Abstract

Despite the worldwide recognition of the dangers of diabetes mellitus, diabetic patients' awareness of and attitudes toward their heightened risk for oral diseases has not been fully addressed. Oral hygiene behavior and seeking oral health care depend on a number of factors. Lack of knowledge about dental health and comply better with hygiene is among the reasons for non-adherence to oral hygiene practices, economical constrains, lack of facilities and lack of proper guidance. The Purpose of this study was to assess the knowledge and awareness of diabetic patients about their risk for oral diseases as complications associated with diabetes, and to assess their attitudes and practices toward sustaining good oral health through proper oral hygiene and regular dental check-ups. A cross sectional study was conducted including 612 diabetic patients visiting the primary health care centers in abha city. Results showed that More than half of the included patients (52.3%) were not aware that diabetic patients are more prone to oral diseases and only less than half of them (46.1%) and (46.4%) knew that DM. cause dental caries and affect gingival. The level of awareness and dental health knowledge in diabetic patients was deficient. Most diabetic patients knew about various medical complications of diabetes and the effect of DM on the body systems. About the attitude and practice of the diabetic patients towards oral health, the overall oral hygiene measures in diabetic patients were found to be good.

**Keywords:** Diabetic patients, knowledge, Attitude and practice, oral Health

## 1. Introduction

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hyperglycemia. It is associated with abnormalities in carbohydrate, fat, and protein metabolism, and results in chronic complications, including microvascular, macrovascular, and neuropathic disorders. (1). Diabetes mellitus (DM) is increasing in prevalence worldwide, reaching the status of an epidemic and costing healthcare services significant amounts of money in direct and indirect costs. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030, while in developing countries the prevalence is projected to double between 2000 and 2030 (2) according to the (who), at least 220 million people or 2.8% of the population worldwide suffer from diabetes. Its incidence is increasing rapidly, and is estimated that by the year 2030, this number will almost double. The greatest increase in prevalence is expected to occur in asia and africa. The increase in incidence of diabetes in developing countries follows the trend of urbanization and lifestyle changes (3).

diabetes mellitus is associated with many micro and macrovascular complications in the body.in addition to these, oral complications and manifestations in the form of gingivitis, periodontitis, xerostomia, opportunistic infections, greater accumulation of plaque, delayed wound healing, oral paresthesia, and altered taste and candidiasis are also becoming the emerging problem in dental health sector and has a very important impact on the social and economical sectors of the countries. (4).

There has been a growing evidence showing that patients with diabetes have higher severity of periodontal disease. They are 2-3 times more likely to have periodontitis as compared to non-diabetic patients which is related to long term metabolic control and disease duration (5). Studies have proved a bidirectional adverse relationship between diabetes and periodontal disease; diabetes can aggravate periodontitis, and periodontitis can negatively affect control of diabetes (6,7)

Preventive measures like regular proper brushing, flossing, and periodic dental visits should be ensured , which will not only prevent so many complications due to diabetes but will also decreases the morbidity due to these manifestations. Oral hygiene behaviour and seeking oral healthmcare depend on a number of factors (8,,9)

Lack of knowledge about dental health and hygiene is among the reasons for non-adherence to oral hygiene practices due to illetracy, economical constrains,lack of facilities and lack of proper guidance (10)

Oral health attitudes and beliefs are significant for oral health behavior. A higher likelihood of seeking preventive dental care is found to be associated with dental

Knowledge , so health education attempts to change behaviors by altering an individual's knowledge, attitudes, and beliefs about health matters . (11,12)

Misconceptions or incorrect knowledge about oral health may actually lead to harmful behaviors. For example, instead of brushing and flossing more often, people with diabetes may believe they should stop brushing or flossing when their gums bleed while brushing; or people with diabetes exhibiting dry mouth may not know that using mouth rinse containing alcohol to improve oral hygiene actually increases mouth dryness. These misconceptions and incorrect information about oral health could act as major barriers to efficient prevention and management of oral disease in this high-risk population.(13)

Despite the worldwide recognition of the dangers of diabetes mellitus, diabetic patients' awareness of and attitudes toward their heightened risk for oral diseases has not been fully addressed (14)

A study by allen et al. Assessed the knowledge of diabetic patients about their risk for periodontal disease, their attitude toward oral health, and their oral health-related quality of life. The researchers found that only 33% of the participants were aware of their increased risk for periodontal disease (15). Similarly, eldarrat (16) found that diabetic patients' awareness of their increased risk for oral diseases was low compared to their awareness of systemic diseases and a significant association was found between glycemic control and oral infections. Furthermore, moore et al. (17) assessed oral health attitudes, behaviors, and knowledge of participants with type 1 diabetes and found that most of the participants were unaware of the oral health complications of diabetes mellitus and the need for preventive care.

Unfortunately, caring for the oral cavity is often overlooked when trying to control other problems associated with diabetes which may contribute to hidden morbidity and undue suffering from oral health problems. Baseline data on knowledge levels are required to determine which particular areas of oral health education are in need of improvement for this vulnerable population

## 2. Objectives

1. To assess the knowledge and awareness of diabetic patients of their risk for oral diseases as complications associated with diabetes,
2. to assess their attitudes and practices toward sustaining good oral health through proper oral hygiene and regular dental check-ups

## 3. Methodology

This study is a cross sectional descriptive survey of 612 diabetic patients visiting the primary health care centers in abha city.

Patients included in the study were patients suffering from type 1 or type 2 diabetes of all age groups, having at least one natural tooth, and having been diagnosed with diabetes for at least 6 months formed the inclusion criteria. Diabetic medical personnel or who were apparently physically or mentally handicapped were excluded from the study.

a questionnaire was designed to assess the knowledge, attitude, and practices of diabetic patients along with corresponding demographic variables.

After taking informed consent from each eligible participant before administration of the questionnaire, willing participants were informed in details by the investigators about the research project and its consequences. Privacy of the patients was ensured during filling of questionnaires.

At the end of questioning, patients were informed about the impact of their systemic condition on oral health and were given a health education booklet.

The data were analyzed using spss version 20. Comprehensive descriptive statistics were produced for all demographic and KAP variables.

## 4. Results

A total of 612 patients fulfilling the inclusion and exclusion criteria were enrolled into the study . 274 (44.8%) were males and 338 (55.2%) were females. The median age of the included patients was 56.00. The distribution of diabetic patients according to the sociodemographic characteristics is shown in table (1):

Patients characteristics	Number	Percentage
<b>Sex</b> male female	274 338	44.8 55.2
<b>Age (years)</b> less than 15 15-35 35-55 more than 55	22 94 187 309	3.6 15.3 30.6 50.5
<b>Nationality</b> saudi non-saudi	574 38	93.8 6.2
<b>Education</b> illiterate primary intermediate secondary university or above	329 93 26 126 38	53.8 15.2 4.2 20.6 6.2
<b>Smoking status</b> yes no	110 502	18.0 82.0
<b>Duration of diabetes (years)</b> less than 1 1 - 5 5-10 more than 10	24 155 121 312	3.9 25.3 19.8 51.0

Most of the included patients (93.8%) were saudi. As regard of the educational status, more than half of the included subjects were illiterate while only 6.2% of them had been educated up to the university level or above. Among the included patients, 18.0% were smokers. More than half of the patients (51.0%) had d.m. for a period more than 10 years.

**Table( 2): awareness about effect of diabetes mellitus on the oral health:**

	Yes	No	Do not know
<b>Diabetics are more prone to oral diseases</b>	292 (47.7%)	16 (2.6%)	304 (49.7%)
<b>Diabetes mellitus cause dental caries</b>	282 (46.1%)	14 (2.3%)	316 (51.6%)
<b>Diabetes mellitus affect gingiva</b>	284 (46.4%)	9 (1.5%)	319 (52.1%)
<b>Diabetes cause oral fungal infection</b>	240 (39.2%)	24 (3.9%)	348 (56.9%)
<b>Is smoking is more injurious to the gum of diabetics more than non diabetics?</b>	514 (84.0%)	48 (7.8%)	50 (8.2%)

More than half of the included patients (52.3%) were not aware that diabetic patients are more prone to oral diseases. Only less than half of them (46.1%) and (46.4%) knew that d.m cause dental caries and affect gingiva

consequently. 60.8% of the patients did not know that d.m cause oral fungal infection. The study showed that most of the patients (84.0%) were aware that smoking is more injurious to the gum of diabetic patients more than non diabetics.

**Table (3): knowledge about the signs of gingival diseases:**

	Yes	No	Do not know
<b>Bleeding during brushing</b>	<b>152 (24.8%)</b>	<b>43 (7.0%)</b>	<b>417 (68.1%)</b>
<b>Swollen red colored gingival</b>	<b>130 (21.2%)</b>	<b>57 (9.3%)</b>	<b>425 (69.4%)</b>
<b>Soreness of gingival</b>	<b>133 (21.7%)</b>	<b>63 (10.3%)</b>	<b>416 (68.0%)</b>

As regards to the knowledge of the included patients about the signs of gingival diseases, about three fourths (75.1%) of them were not aware that bleeding during brushing is a sign of gingival diseases while only 21.2% and 21.7% of them know that swollen red colored gingival and soreness of gingival consequently are signs of gingival diseases.

**Table (4): awareness about the complication of diabetes on body systems**

	Yes	No	Do not know
<b>Effect of D.M on the eyes</b>	<b>399 (65.2%)</b>	<b>14 (2.3%)</b>	<b>199 (32.5%)</b>
<b>Effect of D.M on the kidneys</b>	<b>401 (65.5%)</b>	<b>10 (1.6%)</b>	<b>201 (32.8%)</b>
<b>Effect of D.M on the nerves</b>	<b>390 (63.7%)</b>	<b>11 (1.8%)</b>	<b>211 (34.5%)</b>
<b>Effect of D.Mon the heart</b>	<b>399 (65.2%)</b>	<b>10 (1.6%)</b>	<b>203 (33.2%)</b>
<b>Diabetic foot</b>	<b>519 (84.8%)</b>	<b>3 (0.5%)</b>	<b>90 (14.7%)</b>

As regards the knowledge of the included patients about the effect of D.M on the body systems, about two thirds of them know that the D.M affects the eyes, kidneys, nerves and the heart (65.2%, 65.5%, 63.7%, and 65.2%) consequently. Most of the patients (84.8%) knew that diabetic foot is a complication of D.M.

**Table (5): Attitude and practice of diabetic patients towards oral health**

	Number	Percentage
<b>If you have an oral problem, what should be done?</b>		
consult a physician	86	14.1
consult a dentist	474	77.5
self remedy	44	7.2
ignore it	8	1.3
<b>Do you brush your teeth?</b>		
yes	509	83.2
no	103	16.8
<b>The frequency of teeth brushing</b>		
after every meal	111	21.8
twice daily	105	20.6
once daily	160	31.4
occasionally or nil	133	26.2
<b>How often do you visit the dentist?</b>		
every 3 months	34	5.6
every 6 months	103	16.8
once a year	419	68.5
more than 1 year	8	1.3
no visits	48	7.8
<b>Do you want to get education about effect of diabetes on oral health?</b>		
yes	403	65.8
no	209	34.2

About the attitude and practice of the diabetic patients towards oral health, 77.5% of them will consult a dentist if they had an oral health problem while only 8.5% will use self remedy or ignore it. Most of the included patients (83.2%) brush their teeth. As regards to the frequency of teeth brushing, 26.2% brush occasionally or no brushing. More than two thirds (68.5%) of the patients visit the dentist once a year while 7.8% of them did not visit the dentist at all. About two thirds (65.8%) of the patients want to get education about the effect of diabetes on oral health.

### 5. Discussion

Diabetes has a negative impact on the patient's health due to its many complications. Diabetic patients develop complications due to lack of awareness of the disease. There is increasing amount of evidence that patient education is the most effective way to lessen the complications of diabetes. (18)

A total of 612 patients were enrolled into this study. Female patients were more in number than males and the maximum number of patients were in the age-group of more than 55 years. This is similar to the study carried out in western nepal by dinesh *et al.* (19)

This study showed that there is lack of awareness about the relationship of diabetes with oral complications. And more than half of the participants did not have adequate oral health knowledge related to diabetes. The results are consistent with studies conducted in Saudi Arabia and worldwide (20,21,22). This may indicate lack of oral health counseling on the part of physicians and illiteracy

In the present study, it was found that less than a fourth of the respondents were aware of . (signs of gingival diseases like bleeding during brushing, swollen red colored gingiva and soreness of gingiva). These results are in accordance with previous studies (17,23)

This study revealed that most diabetic patients knew about various medical complications of diabetes and the effect of DM on the body systems like the eyes (retinopathy), kidneys (nephropathy), nerves (neuropathy), the heart and diabetic foot because their physicians had laid emphasis on these topics. This may indicate lack of oral health counseling on the part of physicians, as evidenced by other studies (24,25).

About the attitude and practice of the diabetic patients towards oral health, the overall oral hygiene measures in diabetic patients were found to be good in this study. Most of the included patients consult the dentist, brush

their teeth at least Once daily and regularly visit the dentist at least once a year for check up. .these findings are in agreement with fatin and rehana studies (20,25). On the other hand these findings are in disagreement with kamran study in pakistan (21) who found that overall oral hygiene measures in diabetic patients were deficient , this may be due to lack of health education about oral hygiene.

## 6. Conclusion

The level of awareness and dental health knowledge in diabetic patients was deficient. Most diabetic patients knew about various medical complications of diabetes **and the effect of DM on the body systems**. About the attitude and practice of the diabetic patients towards oral health, the overall oral hygiene measures in diabetic patients were found to be good.

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