

Original Article

Evaluation of Knowledge, Attitude and Practice between Periodontal Disease and Diabetes

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Abstract

Introduction: The importance of the periodontal health maintenance and promotion in diabetes mellitus has been supported. Evidence showed that many patients are unaware about effects of diabetes mellitus on oral health. The aim of this study is to evaluate knowledge, attitudes and practice of diabetic patients concerning the risk of periodontal disease and prevention.

Materials and Methods: In this cross sectional study, 156 diabetic patients referring to Yazd Diabetic Research Center were recruited by random selection. Patients completed questionnaires, which included 29 questions about their knowledge, attitude and practice of oral health in diabetes mellitus. The data was scored and analyzed.

Results: The results showed knowledge (58.64) and attitude (46.86) scores of diabetic patients were moderate, while their practice (24.3) score were poor. There is statistical significant relation between mean scores of knowledge, attitude and practice of patients with their educational level and age.

Conclusion: This study showed knowledge, attitude and practice level of diabetic patients were insufficient on oral health care.

Keywords: Periodontal Diseases; Diabetes Mellitus; Patients; Knowledge; Attitude

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Introduction

Periodontitis is a common chronic disease of the tooth-supporting structures, that is caused by bacterial deposits accumulating on the tooth surface ^[1, 2]. This inflammatory disease resulted from bacterial pathogens and proinflammatory cytokines released from inflammatory host response ^[1]. Local oral inflammatory disease, like periodontitis, may induce systemic inflammation, which could aggravate systemic diseases such as cardiovascular disease, pulmonary disease, rheumatoid arthritis and diabetes mellitus ^[3].

Diabetes mellitus (DM) is a metabolic disorders characterized by hyperglycemia ^[4]. This complex disease is one of the health threatening problems in 21st century, which has varying degrees of systemic and oral complications ^[5]. Many Studies demonstrated that a bidirectional adverse relationship between DM and periodontal disease, which it could aggravate periodontitis. Periodontitis could negatively affected control of DM ^[6]. Previous study showed that non glycemic control is an important risk factor for periodontal disease. The healthcare professionals recently focused on relation between oral diseases and DM ^[7].

Investigations have demonstrated that preventive approach and treating modalities of periodontal disease could cause glycemic control in diabetic patients ^[8]. Moreover, according to the available evidence, clinicians should concern to educate diabetic patients on the effect of the periodontal disease in the management regimen ^[7, 9]. They could refer

patients with diabetes for oral health examination and emphasize on the necessity of oral health care. The aim of this study is evaluation of knowledge, attitudes and practice of diabetic patients concerning their risk of periodontal disease and its preventions. This information could improve oral health status in diabetic patients and also help to control diabetes.

Materials and Methods

Participants in this cross sectional descriptive study were 156 diabetic patients, which had been referred to Yazd Diabetic Research Center. They should have at least 10 teeth and accept to take part in this project. Exclusion criteria were gestational diabetes and not capable to complete questionnaire. Patient's characteristics including age, sex, job and educational level were recorded. Twenty nine questions were about their knowledge, attitude, practice and their dental and medical history. Validity of questionnaire was 72%. Answers were scored and analyzed using ANOVA and T- test Knowledge.

Poor knowledge was scored between 0 to 40, moderate was 40 to 65 and good 65 to 100.

Poor attitude was scored between 0 to 25, moderate was 25 to 50 and good 50 to 100.

Poor practice was scored between 0 to 30, moderate was 30 to 70 and good 70 to 100.

Results

In the present study, 156 patients with the mean age of 50.02 ± 12.27 including 43 males with the mean age of 51.76 ± 12.45 and 113

females with the mean age of 49.36 ± 12.2 participated (Table 1).

Table 1. Demographic data of participants in the study

| variable | Male | | Female | | total | |
|-------------------------------|--------|-------------------------|--------|-------|--------|-------|
| | Mean | Standard deviation (SD) | Mean | SD | Mean | SD |
| Age (year) | 51.76 | 12.45 | 49.36 | 12.2 | 50.02 | 12.27 |
| Duration of disease (year) | 8.6 | 5.3 | 9.4 | 7.1 | 9.2 | 6.6 |
| Fasting Blood Glucose (gr/dr) | 149.53 | 52.82 | 144.04 | 57.83 | 145.52 | 56.41 |

Eleven patients smoke, 83 patients have good glycemic control, that 21 of them were male (48.8%) and 62 of them were female (54.9%).

The most oral complications in diabetic

patients were dry mouth (78.2%), oral malodor (64.1%), and unpleasant tastes (48.1%). Gingival bleeding and edema were next common (Table 2).

Table 2. Oral complications in diabetic patients

| Oral sign | number | percent |
|--------------------------|--------|---------|
| Dry mouth | 122 | 78.2 |
| Mouth unpleasant taste | 75 | 48.1 |
| Mouth and tongue burning | 29 | 18.6 |
| Oral malodor | 100 | 64.1 |
| Gingival bleeding | 13 | 8.3 |
| Gingival burning | 7 | 4.5 |
| Tooth sensitivity | 5 | 3.2 |
| Tooth mobility | 7 | 4.5 |
| Edema | 12 | 7.7 |

The mean of the knowledge and the attitude score of all patients in this study was 58.64 and 46.86, which both of them were medium score. However, the mean of the practice score of

these patients was 24.3, which it was low. The results of present study showed that 67 patients had good knowledge score (42.9%), but only 18 patients have good practice (11.5%) (Table 3).

Table 3. Knowledge, attitude and practice score of the patients about the relationship of periodontal disease and diabetes

| | good | | moderate | | poor | |
|-----------|---------|--------|----------|--------|---------|--------|
| | percent | Number | percent | number | percent | Number |
| Knowledge | 42.9 | 67 | 39.1 | 61 | 17.9 | 67 |
| Attitude | 5.1 | 8 | 86.5 | 135 | 8.3 | 8 |
| practice | 11.5 | 18 | 17.9 | 28 | 70.5 | 110 |

The mean knowledge, attitude and practice of the patients with DM less than 9 years and more than 9 years were significant different (p-value = 0.002). The mean knowledge, attitude and practice of the patients with educational level less than diploma was significant different with educational level more than diploma (p-value < 0.001, T test). The mean knowledge and practice of the patients more than 50 years old was significant different with the patients less than 50 years old (p-value < 0.05, T test).

However, the mean attitude of the patients more and less than 50 years was not significant different (p-value = 0.242). Pearson correlation coefficient showed a direct linear relationship between the scores of knowledge, attitude and practice (p-value <0.001).

Generalized Linear Model was used to evaluate the relation between age, disease history and educational level with knowledge, attitude and practice scores in these patients (GLM).

The results showed significant correlation between patients knowledge, attitude and practice with their educational level (p-value < 0.001, GLM).

There were significant relation between educational level (p-value = 0.006) of patients and their attitude (p-value = 0.002) with their practice.

The results confirmed, patients have been received most information from their appropriate specialist clinician (87.2%), then from the television (25.6%) and newspaper (9.6%) (Table 4).

Table 4. Distribution of source of getting information in patients

| Source of information | number | percent |
|-----------------------|--------|---------|
| Specialist clinician | 136 | 87.2 |
| Dentist | 1 | 0.6 |
| Nurse | 1 | 0.6 |
| Television | 40 | 25.6 |
| Newspaper | 15 | 9.6 |
| internet | 1 | 0.6 |

In this study only 7 patients (4.4%) have been referred to dentist from their specialist clinician.

Discussion

Periodontal disease is the sixth main complication of DM, which proves diabetic patients are more susceptible to periodontal disease [10-12]. Correct knowledge and information about periodontal health in diabetic patients is important [13].

Diabetic patients should have regular recall program visits, because individual care of patient is not sufficient and consultation with dentist is necessary to enhance oral health promotion [14, 15]. It is clear that the knowledge and attitude of each person in health care is important, and take information about them to increase general health level is critical.

The results of the present study showed oral complications of diabetic patients are oral halitosis (64.1%) and unpleasant oral taste (48.1%). Dry mouth and the medications could cause most of the complications [16].

In the present study 18% of patients had poor knowledge, 39% moderate and 43% good score. Eight percent of patients had poor attitude, 86% moderate and 5% good score. Also, 70% of patients had poor practice, 18% moderate and 12% good score. The mean score of the practice was 24.3 and the scores of the attitude and knowledge were 46.86 and 58.46, which knowledge and attitude mean score were medium and practice was low.

The results of Habashneh study [14] showed 48% of patients knew diabetic patients are

more susceptible to periodontal disease. Thirty eight percent of patients had knowledge about the effect of the periodontal disease on glycemic control. In the Yueh study [17], 47% of the participants answered five or more (out of a maximum of seven) questions in oral health related to diabetes correctly. The differences observed in the awareness of patients can be attributed to difference in communities. Al-Khabbaz et al study [9] evaluated knowledge of dental and medical practitioners concerning the effects of diabetes on periodontal health. The results of study showed only 50% of all participants believed that patients with diabetes were more susceptible to periodontal diseases than without diabetes.

In the present study 70% of patients had poor practice, which was not agree with the Habashneh study [14]. In fact, despite good knowledge and attitude of patients, their practices were in low level which could have been influenced by some other factors such as environmental and social factors.

The results of present study showed there was significant differences in mean knowledge score between patients less and more than 50 years old (p-value = 0.046), in which patients less than 50 years old had higher score. Taking into account the increasing knowledge of patients with aging, it should be born in mind that increase in knowledge could also be due to higher educational level of this group of patients. According to results of present study there was significant differences in mean practice score between patients less and more

than 50 years old (p -value = 0.002). Present results showed that only educational level had direct relation with practice of the patients, which, again, it could be attributed to higher level of practice in patients who are under 50 years of age as well as their higher educational level. However, Karikoski et al study^[18, 19] in 2001 and 2002 showed 40 years old patients and older had higher practice level.

There was significant relationship between knowledge score and educational level in the present study (p -value < 0.001), which was confirmed in Ayanbadejo et al study^[20]. In present study patients with academic degree had more knowledge score about periodontal disease and diabetes. These results showed significant relationship between practice (p -value = 0.001) and attitude (p -value < 0.001) scores and educational level, which were agree with Kairkoski et al study^[19].

Significant relations were found between duration of disease and knowledge (p -value = 0.002), attitude (p -value < 0.001) and practice (p -value = 0.001) scores of patients in the present study. Patients with disease shorter than 9 years had higher mean knowledge score, which could explain by higher educational level in this group. There was not significant relation between mean scores of knowledge, attitude and practice with sex of patients,

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which these results were in contrast to Karikoski et al study in 2001 and 2002^[18, 19]. According to the results of Karikoski et al^[18, 19] and Al-Khabbaz et al female had higher knowledge score than men.

In the present study only 4.4% of patients were referred to the dentist by their appropriate specialist physician, which is too low. These patients have been received most of their information about diabetic disease and its relation to oral disorders from their specialist physician, which did not change their practice to visit dentists. In Habashneh et al study^[14] 50% of patients had received most knowledge from television and internet. In other study by Allen et al^[13] 50% of patients had received most knowledge from their dentist. Differences observed in source of information in different studies could be due to difference in health education facilities and availability. This could also be attributed to differences in educational level of patients.

Conclusion

This study showed knowledge, attitude and practice level of diabetic patients were insufficient about oral health care. Majority of these patients received information from their specialist physician, which did not change their practice to visit dentists.

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