

Oral health Knowledge of Diabetic Patients before and after the Education Package

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ABSTRACT

Statement of the Problem: Oral health education may play an important role in the prevention of oral complications of diabetes mellitus. Different methods have been used to present these educations.

Purpose: This study investigated the efficacy of oral health education package to increase knowledge of diabetic patients about oral health in Iran.

Materials and Methods: In this experimental study, 371 diabetic patients (187 individuals in intervention and 184 ones in control group) were selected. Knowledge of control and case groups was evaluated using a questionnaire at the baseline. The questions were about oral manifestations of diabetes and associated concerns. Then an educational package about that manifestation and complications was provided for the intervention group. No education was given to the control patients. After one month knowledge of both groups was measured again by the same questionnaire. The knowledge score variations between the two groups before and after education package delivery were statistically analyzed by repeated measures ANOVA.

Results: In the intervention group, the mean knowledge scores at baseline after education were 4.107 (SD = 1.414) and 4.786 (SD = 1.505), respectively. In the control group, the mean scores of patients at the beginning of the study and after 1 month were 4.609 (SD = 1.214) and 4.734 (SD = 1.259), respectively. No significant differences were observed between the two groups (P=0.077).

Conclusion: The results showed that educational package had limited effect on increasing the diabetic patients' knowledge regarding oral complications. Another method of education might be more effective than this method.

Keywords: Education package, Diabetes, Oral Complications, Prevention, Oral Health.

INTRODUCTION

Diabetes mellitus occurs due to the body's inability to produce insulin. There is lack of balance between the need and production of

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insulin in this disease.⁽¹⁾ The prevalence of diabetes in 32 countries shows that incidence has increased from 4% in 1995 to 5.4% in 2025 and the number of people with diabetes will increase up to 122%. Accordingly, the number of diabetics will reach 300 million in 2025 from 135 million people in 1995.⁽²⁾ In Iran, 7.7% of adults or

2.2 million adults are estimated to have diabetes.⁽³⁾ Diabetic patients show a higher prevalence of oral problems, dental caries, xerostomia, periodontal disease, sensory disorders, problems with taste, salivary gland stones, infections such as oral candidiasis and mucosal lichen planus.⁽⁴⁾ Diabetes Association of America introduced periodontal disease as the sixth complication associated with diabetes in 1997.^(5,6) Diabetes is a disease that may reduce the tissue resistance around the teeth (gingiva and bone) against microbial activity, which probably occurs due to impaired immune cell response.⁽⁷⁾ These complications may also be related to the development of microangiopathy in the oral tissue.⁽⁸⁾ Because of the possible relationship between periodontal diseases and diabetes mellitus, maintaining appropriate oral health in diabetic patients is important. Oral and dental health improves quality of life of affected patients and plays an important role in nutrition and careful control of glucose. Optimal control of diabetes, appropriate oral hygiene and regular visits to the dentist have an important role in prevention of oral manifestations of diabetics. On the other hand, regular oral health education by dentists can reduce the amount of plaque, calculus and periodontal index (CPI) in diabetic patients.^(9,10) Phillips and Bartold demonstrated that dental and periodontal problems could affect diabetes management.⁽¹¹⁾ Furthermore, Lee et al

(2009), in assessing the effects of education program in diabetic patients, showed that this program improved oral infections status in patients and also reduced the rate of periodontal destruction.⁽¹²⁾ Therefore, this study was carried out to raise awareness of diabetic patients about oral health by dental training package.

MATERIALS AND METHODS

In this experimental study, 371 diabetic patients (187 individuals in the intervention group, selected by non-probability convenience sampling and 184 ones in the control group, who were matched with the case group) were evaluated. Patients had at least high school graduation and no more systemic disease. Also informed consent was taken from the patients. Knowledge of the control and case groups was evaluated using a questionnaire at baseline. The questions were about oral manifestations of diabetes and associated concerns (oral complications related to increased blood sugar, common gingival signs in diabetic patients, mucosal infections in diabetic patients, dental treatment risk in diabetic patients, insulin intake before dental treatment, dental caries in diabetic patients and various oral health aspects in diabetic patients). Then an educational package about the manifestations and complications was provided for the intervention group. No education was given to the control patients. After one month knowledge of both groups was measured again by the same questionnaire.

Three professors of Oral Medicine Department of Shahid Beheshti University of Medical Sciences confirmed the validity of the questionnaire. For reliability confirmation a pilot study was carried out on 10 diabetic patients.

Each correctly answered question received 1 score and the sum of correct answers were calculated. The knowledge score variations between 2 groups before and after education package delivery were statistically analyzed by repeated measures ANOVA.

RESULTS

In this research, in the intervention group (187 patients), 118 patients (63.1%) were female and 69 (36.9%) were male and in the control group, 85 (46.2%) patients were female and 99 patients (53.8%) were male. In addition, in the intervention group, 111 patients (59.4%) had high school education and 76 (40.6%) had university education. In the control group, 84 patients (45.7%) had high school education and 100 (54.3%) had university education. The mean (SD) age in the case group was 43.9 years (± 9.06 years) and the average age in the control group was 41.63 years (± 10.47 years). There were no significant differences between the groups in terms of gender, age and education ($P=0.081$, $P=0.271$ and $P=0.078$)

In the intervention group, the mean (SD) score of patients at baseline was 4.107 (1.414, a range of 1–9), with 4.786 (1.505, a range of 0–9) after education. In the control group, the mean scores of the patients at the beginning of the study and after 1 month were 4.609 (1.214, a range of 2–9) and 4.734 (1.259; a range of 1–9), respectively (Table 1)

Repeated measures ANOVA showed that education through the training package had no effect on increasing the awareness of patients in the intervention group compared with the control group ($P=0.077$).

Table 1: Comparison of knowledge in the case and control groups before and after education

Group	Before education		After education		P value (before & after)
	Mean	SD	Mean	SD	
Case	4.107	1.414	4.786	1.505	0.518 Repeated measured ANOVA
Control	4.609	1.214	4.734	1.259	0.615 Repeated measured ANOVA

DISCUSSION

It has been reported that education through paper and training packages is a systematic and important intervention for long-term raising of awareness of health issues, such as oral health in different groups.⁽¹³⁾ Of course, this booklet should be well presented, should have good structure, should be easily understood by the general population and their effects should also be stable.⁽¹³⁻¹⁵⁾

The results of this study showed that the efficacy of oral health package in increasing diabetic patients' knowledge about oral manifestations, special consideration of dental management and control of blood sugar was limited. Although there were no significant differences between the two groups, increasing awareness in the intervention group was more than that in the control

group, contrary to the results reported by Lee et al (2009). In a recent study the effects of education and health care on periodontal conditions in patients with controlled type II diabetes was evaluated. According to the results, all the oral health parameters such as plaque index, bleeding index and index of dental calculus in the intervention group of patients significantly decreased for 6 months after treatment.⁽¹²⁾

In the present study, only the training package was provided and the patients did not receive the required treatment.

Despite recommendations by researchers to study the training package, patients had no obligation to study the booklet and there was no control over that. Therefore, it is possible that patients never read the educational package after receiving it and were not serious about understanding it. Accordingly, research studies in which it is unclear whether the educational booklet

was carefully studied by the subjects or not have been criticized.⁽¹⁶⁾

The intervention and control groups gained less than half the scores in each phase. This reflects lack of their awareness about oral manifestations of diabetes. Lack of information about disease has been reported in several studies.

Allen et al (2008) concluded that knowledge of patients about increased risk of periodontal disease following diabetes was limited. It was remarkable, especially in comparison to other complications of diabetes.⁽¹⁾

Moore et al (2000) showed that patients with diabetes did not have enough knowledge about the oral complications and their oral health behaviors in comparison with the controls were not better.⁽¹⁷⁾

Karikoski et al (2002) recommended that due to lack of regular referral of diabetic patients to a dental office health care professionals should make more efforts to implement oral health programs in this group.⁽¹⁰⁾

Based on research results by Akyuz et al (2004) on the level of knowledge of patients about their oral health behaviors, deficiency of information about oral manifestations of disease is quite evident.⁽¹⁸⁾ However, Alves et al (2009) showed that oral health behavior in children with diabetes was better than that in the control samples.⁽¹⁹⁾

There is no doubt that patients need to be thoroughly informed about the risks of oral

complications associated with the disease so that based on this knowledge they can implement health behaviors and use appropriate tools to perform oral health.

In the present study, only one technique was used to deliver educational materials to patients. It has been shown that education through lecture or group discussion can lead to increased awareness of patients in various fields. However, the paper training compared with the content of newspapers, television shows or advertising in cities has advantages because they can be frequently used. In addition, costs are low and a significant number of patients can be educated through them.⁽²⁰⁾

CONCLUSION

This study showed that dental educational package has limited effects on increasing the diabetic patients' knowledge regarding oral complications. Another method of education might be more effective than this method; therefore, more studies are necessary in this area.

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