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Original Research Article

The effect of educational program based on the health belief model in adopting dental caries preventive behaviour's in pregnant mothers referring to health treatment centers in Ardabil

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ABSTRACT

Background: Oral and dental diseases are one of the most common diseases and oral hygiene is one of the important branches of public health which is more important during pregnancy. This study aimed to determine the effect of the educational intervention on oral health behaviours in pregnant mothers.
Methods: In this intervention study, 170 pregnant women in the city of Ardabil were randomly selected and divided into two case and control groups (each of 85 people). The data were collected through a researcher-made questionnaire based on the Health Belief Model of oral health care and then they were analysed using the SPSS version 19.
Results: Demographic data in both case and control groups were approximately the same. The mean of health belief model variables increased significantly after intervention (P 0.05). Mothers also obtained the most information on the prevention of dental caries before intervention through television programs but after the intervention, they obtained the most information through the curriculum. In this study, before the intervention, 23.7% of mothers used dental floss once a day. After training, this amount reached 40.8% of mothers.
Conclusions: Findings showed that educational intervention based on the health belief model can promote oral health behaviours. Therefore, it is recommended to conduct health education courses at the community level.

Keywords: Health Belief Model, Pregnant mothers, Tooth decay

INTRODUCTION

Pregnancy is an acute period in the life of every woman. Pregnancy is a natural process associated with changes in the body, including in the mouth and teeth. These changes will result in irritation of the mouth and teeth if they are not taken into account in a timely manner. Hormonal and nutritional changes favor conditions for the development of gum disease and tooth decay in pregnant mothers.[1] Periodontal diseases during pregnancy can occur in the forms of oral inflammation, pregnancy, and pregnancy gingivitis.[2] Studies have shown that periodontal disease during pregnancy is associated with adverse outcomes such as pre-eclampsia, preterm delivery, low birth weight, and fetal death.[3] More than 99% of people in the world suffer from dental caries.[4] Research has shown that half of the women during pregnancy do not adequately observe oral and dental hygiene.[3] According to a descriptive study of pregnancy health in a group of Asian women living in England, about 63% of the pregnant women increased sugar intake during pregnancy and about 65% of them used a

toothbrush only once a day, as well as about 59% of them, had a problem with gum bleeding during brushing.[4] According to a study by Gharizadeh et al, in the city of Ahwaz, the average DMFT index (tooth decay, missing teeth, and the number of the filled teeth) in pregnant women was 6.23 and 3.01.[5] In the study of Kazemi H et al, 6.5% of pregnant mothers were well-informed, 34.4% had good performance and 70% had a negative attitude toward oral and dental care.[6] These statistics indicated that planning for the prevention of dental caries in the vulnerable group of pregnant mothers is required. In order to achieve this goal, researchers use models to change behavior. One of the effective models in education and promotion of health is the Health Belief Model.[7] This model measures perceived sensitivity and the attitude of mothers about their sensitivity to denture decay, as well as their perceived severity of the attitude of mothers towards the deterioration and complications of tooth decay both for themselves and for the fetus. Factors that lead the mother to behave appropriately to take care of oral health care include perceived threats with perceived benefits and barriers, that is, the analysis of potential barriers to appropriate preventative measures to avoid catching the tooth decay, the perceived ability of mothers to take care, practical guide or stimuli that affect the mother from inside and outside, including friends and acquaintances, dentist, midwife, fear of complications of caries or the feeling of inner peace after doing oral health care.[8] Considering the importance of oral hygiene in pregnant women, this study aimed to determine the effect of educational programs based on the health belief model on the adoption of dental caries preventive behaviors in pregnant women referring to health centers in the city of Ardabil.

METHODS

In the case-control, pre-post intervention study, the study population included 170 pregnant women referred to health centers in the city of Ardebil (June 2016 to November 2017). Samples were randomly divided into two groups of case and control, each of which was 85 people. The inclusion criteria for entering the study included pregnant women referred to health centers in Ardabil, who had at least literacy in reading and writing and willingness to participate in the study. Exclusion criteria include a reluctance to continue to participate in the research project, a disease, or something that prevents them from getting educated. In this study, convenience sampling was done for pregnant women referring to five health centers in Ardebil. In this study, data collection tool was a researcher-made questionnaire containing demographic questions, health belief model dimensions and performance checklist such as demographic questions included age, week of pregnancy, education level, household monthly income, insurance coverage, employment status, and previous pregnancy rates. Questions related to the dimensions of health beliefs include Perceived sensitivity (7 questions), perceived severity (6 questions), perceived benefits (7 questions), perceived barriers (8 questions), the practical guide (10 questions) and self-efficacy (6 questions). It should be noted that questions about the health beliefs dimension are designed based on the standard Likert 5-point scale. Regarding the performance checklist, eight questions have been designed in the areas of the proper way of brushing, proper dental floss and proper nutrition for preventing tooth decay. The checklist was completed using direct observation and self-questioning. Scoring in the health belief model is based on the Likert scale (I fully agree = score 5 and I totally disagree = score 1). Of course, the scoring for some questions that end with answers like "I cannot," was as I totally agree = 1 and I totally disagree = 5) in the checklist, the performance of 6 questions is as follows (yes = 1 and no = 0) and the last two questions (Twice a day = 5, once a day = 4, every two days once = 3, once a week = 2 and never = 1). Before the educational intervention, the questionnaire is distributed for both groups, and its information is collected and then the intervention is done for the case group. The intervention included a 40-minute session, training for each person referring to the same health center, including lectures, where the information in the booklet is trained orally and in brief to pregnant women. Author provided the participants with a booklet containing information as.

The definition of caries, decay factors, dental caries symptoms, oral and dental disease prevention methods, how to brush and floss, what is fluoride and how it is used, what is the thymus, its nutrition, and its importance during pregnancy. Teaching brushing and flossing on a maquette, on the basis of the Health Belief Model on the adoption of preventive behaviors for dental caries in pregnant women in the case group was another part of the actions we carried out. Also, two months later, author gave the same questionnaire to both groups to complete and evaluate the impact of education. Then, two months later, author will give the same questionnaire to both groups to complete and evaluate the impact of education.

Data were analysed by SPSS version 19 using descriptive and analytic statistics including Pearson correlation coefficient, ANOVA, Chi-square and T-test for comparison before and after intervention in both case and control groups.

RESULTS

According to the findings of this study, the subjects in the experimental and control groups, in terms of age distribution in both groups, had the highest percentage of age over 26 years.

In terms of income in both groups, the highest percentage was related to income below 20 million Rls. Regarding the level of education in both groups, the highest percentage was related to the above diploma level and the majority of subjects were covered by insurance coverage in both groups. In terms of employment in both groups,

the highest number was housewives. In terms of pregnancy, the highest percentage was related to the first pregnancy. There was no significant difference between the two groups in terms of age, education, income, insurance, employment status and the number of pregnancies (Table 1).

Table 1: Demographic characteristics and effective factors on oral hygiene in pregnant women in Ardebil.

Variable		Case N (%)	Control N (%)	P-value
Age	≤26	22 (28.9)	24 (30.7)	0.636
	>26	50 (71)	51 (70.3)	
Education	Under diploma	13 (22.5)	24 (30.8)	0.47
	Diploma and academic	63 (80.9)	53 (68)	
Income	Dissatisfied	27 (35.5)	29 (37.2)	0.409
	Satisfied	26	19	
Insurance	Yes	64	57	0.121
	No	11	20	
Job	Employed	24	18	0.154
	Housewife	51	60	
Children	0	29	20	0.09
	1	24	25	
	≥2	21	29	

In this study, before the intervention, the mean and standard deviation of perceived susceptibility score in the experimental group was respectively 27.38 and 3.4, and in the control group, it was respectively 27.72 and 4.9, which independent t-test did not show a significant difference between the two groups (P = 0.58). However, after the intervention, this test showed a significant difference between the two groups in the perceived susceptibility (P= 0.001).

Table 2: Comparison of the mean scores of the health belief model constructs on the adoption of oral health behaviours in pregnant women in Ardabil before and after intervention.

Variable	Group	Before intervention	After intervention	P-value
		Mean (SD)	Mean (SD)	
Perceived sensitivity	Case	27.38 (2.49)	39.84 (4.68)	0.001
	Control	27.72 (4.09)	27.92 (5.13)	0.805
		0.583	0.001	
Perceived Severity	Case	27.38 (3.29)	36.75 (4.52)	0.001
	Control	23.41(3.95)	24.92 (3.5)	0.1
		0.623	0.001	
Perceived Benefits	Case	23.72 (2.27)	32.02 (4.09)	0.01
	Control	26.23 (3.58)	27.48 (4.37)	0.642
		0.923	0.019	
Perceived barriers	Case	25.27 (2.44)	34.85 (3.85)	0.014
	Control	27.74 (6.71)	32.57 (5.87)	0.2
		0.653	0.02	
Action guide	Case	22.58 (3.9)	33.32 (6.6)	0.001
	Control	32.25 (4.27)	34.45 (4.4)	0.637
		0.792	0.001	
Efficacy	Case	24.19 (2.14)	33.85 (4.94)	0.001
	Control	19.31(3.88)	22.29 (4.22)	0.352
		0.429	0.001	
Function		19.37 (2.03)	28.87 (4.29)	0.032
		14.16 (2.01)	16.79 (2.19)	0.122
		0.254	0.001	

Table 2 shows the mean of the scores of the variables studied in the test and control groups.

On the other hand, the correlation coefficient test between perceived susceptibility, perceived benefits, perceived barriers, and the practical guide did not show a significant difference (P >0.05).

While there was a significant relationship between perceived severities with perceived susceptibility, perceived benefits, self-efficacy, and performance (P <0.05).

Before the intervention, practical guide, self-efficacy and performance of the samples in the area of dental caries were poor and there was no significant difference between the groups (p >0.05). However, after the intervention, the mean scores of the practical guide, self-efficacy and performance increased significantly (P <0.05).

Also, Tables 3 and 4 show the relative frequency distribution of internal and external practical guide in both the case group and the control group. In the pre-intervention group, pregnant mothers received more information on the prevention of dental caries by television and people around them, while after the educational intervention; the pregnant mothers received more information through books and educational programs at health centers.

Furthermore, according to the findings, in the case group before the intervention, 23.7% of pregnant mothers used dental floss once a day and this rate reached 40.8% after intervention, which indicates the effect of the educational intervention.

Table 3: Frequency distribution of internal and external practical guides on the adoption of oral hygiene behaviors based on the health belief model in pregnant women in Ardabil before educational intervention.

Action guide	Case N (%)	Control N (%)	P-value
External action guide			0.251
Television	54 (71.1)	54 (71.1)	
Internet	38 (50)	48 (61.5)	
Book	13 (17.1)	30 (38.5)	
Around people	44 (57.9)	50 (64.1)	
Other pregnant women	25 (32.9)	38 (48.7)	
Dentist	31 (40.8)	48 (61.5)	
Educational program in health centers	29 (38.2)	29 (37.2)	
Internal action guide			0.08
Internal fear of being compromised by your fetus or your	49 (46.5)	35 (44.9)	
An unpleasant personal experience of dental caries in the past	54 (71.1)	40 (51.3)	
Fear of expensive dentistry costs	50 (68.8)	36 (46.2)	

Table 4: Frequency distribution of internal and external practical guide on the adoption of oral hygiene behaviors based on the health belief model in pregnant women in Ardabil after educational intervention.

Action guide	Case N (%)	Control N (%)	P-value
External action guide			0.01
Television	61 (80.3)	66 (84.6)	
Internet	46 (60.5)	49 (62.9)	
Book	66 (86.8)	29 (37.2)	
Around people	46 (60.6)	50 (64.1)	
Other pregnant women	25 (32.9)	40 (51.3)	
Dentist	37 (48.7)	48 (61.6)	
Educational program in health centers	60 (65.8)	29 (37.2)	
Internal action guide			0.04
Internal fear of being compromised by your fetus or your	49 (64.5)	39 (50)	
An unpleasant personal experience of dental caries in the past	55 (72.4)	45 (57.7)	
Fear of expensive dentistry costs	53 (69.7)	39 (49)	

DISCUSSION

According to the present study, pregnant women were not aware of the relationship between dental caries and early delivery. Many studies have shown that there is a relationship between periodontal diseases during pregnancy with adverse prenatal outcomes such as pre-eclampsia, preterm labor, low birth weight, infant admission to the neonatal intensive care unit (NICU), fetal death, and increased the duration of newborn hospitalization in the NICU.[4,9] This study showed that most pregnant women were not aware of the sensitivity and importance of observing oral health care during pregnancy, which could be due to the lack of proper notification by health care providers during pregnancy or even in the past. The results of the research were consistent with those of Narjes Bahri et al, study.[9] The present study showed that during their maternal gestational period, pregnant women did not know much about the sensitivity of oral and dental health on the oral health of toddlers, young children, and adult children. Therefore, some studies have pointed to the positive effects of early onset of prevention programs and oral health education since maternal gestational period on the oral and dental health of children.[9] In the study, more than half of the pregnant mothers said about insufficient time to go to the dentist's office and lack of boredom, which was coincident with the study conducted by Jalili Z et al.[10] In this study, after the training, the use of dental floss increased significantly, which was consistent with the study conducted by Karami K et al.[11] In the present study, there was a significant relationship between perceived severity and performance after the intervention. In the study conducted by Khodabakhsh Karami et al, there was a significant relationship between perceived severity and performance, too.[11] In the study, there was a relationship between perceived sensitivity and performance, and also between perceived severity, and performance. However, in a study by Moeini et al, conducted on secondary school students in the city of Hamedan, there was a correlation between perceived sensitivity and performance, but there was no relationship between perceived severity and performance.[12] In a study, Arantes R evaluated the knowledge and performance of health care providers and women covered by them after the implementation of the oral health improvement program. He reported that the level of knowledge of health care providers and women about their oral health increased significantly after this intervention. Also, the number of people who used joint toothbrushes with their families decreased and the frequency of use of dental floss increased.[13] Therefore, mothers should be more susceptible to tooth decay during pregnancy. In the present study, there is a significant difference in the field after an educational intervention between the two cases and control groups, which can be a good indicator of the effect of an educational intervention for improving the perceived sensitivity of mothers in the case group. So, after the intervention, the case group believed that they might be at risk of developing tooth decay that has been responsible for improving the performance and the adoption of mother's health behaviors, which is consistent with the use of the health belief model and increasing perceived sensitivity of mothers in the field of prevention of osteoporosis.[14] In this study, the component of perceived barriers was one of the factors that played a very important role in the development of tooth decay. The findings of this study were in line with a study conducted on students in the city of Yazd, as well as various studies conducted both inside and outside the country.[15-20] In the present intervention, having an internal practical guide that encourages the person from the inside to carry out health care, and TV as the most important external practical guide in providing care, can be important. In the study conducted by Motamedi et al, the information source for the samples included training courses (87%), scientific books (37%), journals (7%) and radio and television (5%).[21]

CONCLUSION

The findings showed that educational intervention based on the health belief model can promote oral and dental behaviors. Considering the sensitivity and vulnerability of pregnant mothers in the country, the need to provide a fundamental solution and rapid planning in the prevention of oral and dental diseases is quite obvious. In this regard, holding health education courses, and at the community level, helping families and giving high priority to doing dental treatments before pregnancy is suggested for cost reduction.

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