



Study the Effect of Educational Intervention Based on the Health Belief Model (HBM) On Quality of Life Among Women with Gestational Diabetes

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ABSTRACT

Gestational diabetes is one of the diseases that the patients are responsible for the major share of its control and treatment. Therefore, their knowledge is very important in various fields, especially the improvement of quality of life. Indeed quality of life is an important part of a healthy pregnancy. Suitable training can play an important role in promoting the health of the mother and child. This study was aimed to determine the effect of education based on health belief model on the quality of life of pregnant women with gestational diabetes mellitus referred to the selected healthy centers of Urmia during 2016-2017. This quasi-experimental study was conducted on 80 pregnant women with gestational diabetes referred to health centers of Urmia, Iran. A two-stage cluster sampling was performed. A questionnaire was used for collecting data in two stages before and after the intervention. The questionnaires were distributed and completed in both intervention and control groups and then analyzed. Finally, the data were analyzed using SPSS software. Less than 0.05 was considered significance. The results showed that before intervention, mean score of knowledge, benefits, barriers, perceived Susceptibility and severity, Performance, cues to action, and behavior between the two groups did not differ. After education, the mean scores of all of the above variables increased significantly in the intervention group ($P < 0.001$). The results of this study showed that education based on health belief model has a positive effect on the quality of life of diabetic pregnant women.

Key words: Education, Health Belief Model, Quality of Life, Gestational Diabetes

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INTRODUCTION

Gestational diabetes is associated with potentially harmful effects on the mother and the fetus, which can seriously endanger the health of the mother and the fetus [1]. Diabetes causes fetal complications including increased risk of

microsomal disorders, stillbirth, neonatal hypoglycemia, hyperbilirubinemia, cardiac

hypertrophy, hypocalcemia, polycythemia, obesity, and the risk of developing diabetes in the late adolescence [2, 3]. Also, diabetes Pregnancy increases the risk of developing polyhydramnios, pregnancy-induced hypertension, chronic hypertension, pyelonephritis, and delivery by cesarean section [4-6].

Following the complications and mentioned problems, the quality of life of pregnant mothers of diabetics is severely affected. Quality of life is a multidimensional and complex structure that World Health Organization (WHO) has defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns [7]. Considering the increase and the lack of definitive treatment of chronic diseases, a branch of quality of life has recently been called as health-related quality of life, which has been highly sought after by scientists and health professionals [8].

Also, research has shown that quality of life can positively correlate with the predicted mortality rate of pregnant women with diabetes [9]. The criterion for determining the health-related quality of life of pregnant women with diabetes is the self-assessment of pregnant women [11-10]. In 1950s, Health Belief Model (HBM) began with a group of social psychologists who sought to identify and determine a wide range of people's diability in disease prevention programs [13].

The health belief model has six structures including: perceived sensitivity; a person's belief in the perception of being in a particular situation, perceived severity: the perception of the extent to which these conditions are serious, the perceived benefits; a person's opinion about the effectiveness of suggested activities to reduce the risk of the effect, perceived barriers; belief about the potential negative aspects of a particular health action, cues to action; accelerating forces that trigger a person's need for action, self-efficacy; a person's confidence in his/her ability to follow a behavior [14].

Nowadays, HBM is the most widely used model in health behaviors [15, 16]. Few studies have been conducted on educational intervention based on HBM on the quality of life of diabetic pregnant women. Therefore, due to the high rate of pregnant women with diabetics in the country and the effect of quality of life on their condition, the aim of this study was to investigate the effect of educational intervention based on HBM on the quality of life of diabetic pregnant women referred to health centers in Urmia, Iran.

METHOD AND MATERIALS

The present study was a quasi-experimental study of pre-test and post-test type. After obtaining the necessary permissions, the researcher referred to

the health centers. After referring to the relevant centers and coordinating with the authorities of those centers, one person from staff was selected as a collaborator in this research, and at a separate meeting with each of the collaborating members in the research, the implementation and the necessary tools was explained.

Given the inclusion criteria of the study (pregnant women with diagnosis of gestational diabetes and singleton pregnancy; Iranian nationality, living in Urmia, ages of 15-45 years, diagnosis of disease by a specialist; lack of any physical and mental disease according to patient's medical records and examination; having no alcohol, cigarette and drug abuse; wanted pregnancy; participating time less than one month after diagnosis of gestational diabetes; pregnant women with gestational diabetes treating with human insulin (not analogue); maternal gestational age of 20-24 weeks at the time of entering in the study; having no special exercise program before and during the study, the sampling was started at each center.

After selecting the samples, using phone call, the researcher after introducing himself to the research samples, after declaring the goals and method of the study, invited the patients to participate in the study, and the first meeting with the couples was arranged in order to obtain the trust and cooperation necessary explanations in response to the confidentiality of the responses, the subjects received written consent for participation in the study, and the quality of life questionnaires based on the health belief model were completed for the samples. The educational sessions for the intervention group were arranged and explained about the need for attendance at the educational sessions. Selected samples (80 patients) were randomly divided into two intervention and control groups by coding and lottery.

In the intervention group, patients treating with the diet and insulin accompanied with one family member who had the most help in life, participated in the six 45-minute sessions, weekly for two months in the educational sessions. At each session, a maximum of 10 patients were present and at the end of each session, a educational pamphlet or booklet was provided to the patients. Pamphlets and booklets included all the points made during the educational sessions to remember and apply. The educational programs was prepared by studying books and articles based on educational needs and patient literacy levels.

The education method consisted of two methods including direct and a combination of face-to-face approaches, lectures, group discussion, and the use of educational movies and indirect method through the presentation of pamphlets and educational booklets. Patients were followed up for two months after the educational sessions, with a telephone consultation every two weeks by researcher with each patient and patients were in the sampling centers at the end of each month and question and answer sessions were held in person. In the control group, patients had routine visits by dietitian and gynecologist using diet and insulin-free treatment without the educational program provided to the intervention group. The quality of life of all patients was re-evaluated after two months by the researcher and at the end, the quality of life before and after the intervention was compared in two groups.

The data collection tool in this study was a researcher-made questionnaire. It should be noted that the basis of the questionnaire questions are usually the same based on the model structures in various studies and changes are applied depending on the intervention variable. In this research, the questionnaire consisted of two parts: the first part related to the history of pregnancy (number of pregnancies, deliveries, abortions and live children) and personal information (age, height, weight, level of education, etc.) and the second part was based on 7 dimensions of the health belief model (knowledge, perceived sensitivity, perceived severity, perceived barriers, perceived benefits, cues to action and self-efficacy).

As mentioned above, a researcher-made questionnaire was used to collect data using library studies and available resources including books, articles and valid internet sites in relation to the topic of research under the supervision of supervisors and counselors according to the objectives of the study and health belief model. Content validity index (CVR) and content validity index (CVI) were used to determine content validity. Items were provided to 15 experts, which ultimately 11 experts sent back their comments. After making corrections and getting the final comments of the experts, CVR and CVI for all questions were 0.65 and 0.79, respectively.

To determine the content validity of the questionnaire, the coherence of items was evaluated using "Item is necessary", "It is useful, but not necessary", and "It is not necessary". Three criteria were used to determine the content

validity including relevance, clarity and simplicity with four options including completely relevant, relevant, relatively relevant and not relevant. Questionnaire was provided to 30 pregnant mothers (other than the study group) to confirm reliability. In this case, Cronbach's alpha was 0.74 for the knowledge and for the structures of HBM was 0.79.

RESULTS

The results of this study indicated that the average age of the majority (50%) of pregnant women participating in the study was 20-24 years. The gestational age in the control and intervention groups was approximately 22 weeks. Also, 52.5% of the participants in the study were experiencing their first pregnancy and had no experience of giving birth, as well as 92.5% had no history of abortion. The majority of the participants had 19.5 -26.5 score of BMI. As table 1 shows, 30% of mothers had high school education and 67.5% were housewives, and the majority of husbands had 35-39 years and 57.5% were unemployed. Approximately half of men had college education, and the family income in 37.5 percent of participants was measured adequate.

Also, the results of this study indicated that two groups in terms of history of pregnancy (number of pregnancy ($P=0.56$), number of deliveries ($P=0.87$), number of live children ($P=0.86$), history of abortion ($P=0.64$), gestational age ($P=0.93$), age ($P=0.97$), body mass index ($P=0.24$), educational level ($P=0.33$), occupation ($P=0.12$), husband's age ($P=0.94$), husband's occupation ($P=0.57$), husband's educational status ($P=0.8$) and family income ($P=0.34$) were homogeneous (Table 1).

Table 2 shows the comparison of the mean scores of the health belief model before and after the intervention in the intervention and control groups in women. According to the results of paired t-test and Wilcoxon test, there is a statistically significant difference in terms of knowledge, perceived sensitivity, perceived severity, perceived benefits, perceived barriers, self-efficacy and cues to action as well as behavioral constructs in the intervention group before and after the intervention ($P < 0.001$). In other words, education based on the health belief model affects these structures. This means that the use of educational intervention based on the health belief model has been able to increase the quality of life of women with gestational diabetes (Table 2).

Table 1. Comparison of research units according to demographic characteristics of pregnant women in two control and intervention groups

Variable	Control Group		Intervention Group		df	P value
	Percent	Frequency	Percent	Frequency		
Number of pregnancy	1	52.5	21	50	2	0.56
	2	32.5	12	27.5		
	≤3	15	6	22.5		
Number of delivery	0	52.5	21	47.5	2	0.87
	1	32.5	13	40		
	2	15	6	12.5		
Number of children	0	57.5	23	55	2	0.86
	1	27.5	11	32.5		
	≤3	15	6	12.5		
History of abortion	Yes	7.5	3	5	1	0.64
	No	92.5	37	95		
Age of mother	15-19	15	6	17.5	4	0.97
	20-24	50	20	52.5		
	25-29	17.5	7	15		
	30-34	12.5	5	12.5		
	<40	5	2	2.5		
BMI	19.8	2.9	2	10	2	0.24
	19.8-26	1.4	1	67.5		
	<26	1.4	1	22.5		
Mother's education	Primary	5	2	12.5	4	0.22
	Middle	17.5	7	10		
	High school	30	12	20		
	Pre-collage	25	10	40		
	Collage	22.5	9	17.5		
Mother's occupation	Housekeeper	67.5	27	82.5	1	0.12
	Employee	32.5	13	17.5		

Table 2. Comparison of the mean scores of health belief model structures before and after intervention in two intervention and control groups in pregnant women

HBM structure		Mean	SD	P value	
Knowledge	Intervention	Before intervention	11.56	3.20	p<0.001
		After intervention	19.37	1.62	
	Control	Before intervention	11.08	2.10	
		After intervention	11.97	3.57	
Perceived susceptibility	Intervention	Before intervention	27.61	3.12	p<0.001
		After intervention	31.02	3.35	
	Control	Before intervention	28.18	3.01	
		After intervention	27.27	2.97	
Perceived severity	Intervention	Before intervention	25.30	3.01	p<0.001
		After intervention	28.91	3.57	
	Control	Before intervention	25.59	3.06	
		After intervention	24.81	2.39	
Perceived benefits	Intervention	Before intervention	28.75	3.10	p<0.001
		After intervention	33.22	1.41	
	Control	Before intervention	29.13	2.98	
		After intervention	28.29	3.14	
Perceived barriers	Intervention	Before intervention	22.19	2.92	p<0.001
		After intervention	27.22	2.30	
	Control	Before intervention	22.45	2.71	
		After intervention	21.67	2.47	
Self-efficacy	Intervention	Before intervention	24.83	2.92	p<0.001
		After intervention	28.22	3.40	
	Control	Before intervention	25.10	2.81	
		After intervention	24.59	3.00	
Cues to action	Intervention	Before intervention	15.86	2.17	p<0.001
		After intervention	20.75	1.59	
	Control	Before intervention	16.13	2.11	
		After intervention	16.02	2.42	
Behavior	Intervention	Before intervention	29.86	3.61	p<0.001
		After intervention	37.05	2.15	
	Control	Before intervention	30.37	3.63	
		After intervention	29.54	3.61	

DISCUSSION

The purpose of this study was to determine the effect of educational intervention based on health belief model on the quality of life of diabetic pregnant women. According to the results, the mean of constructs in the health belief model showed a significant difference between the intervention and control groups. In other words, the mean of health belief model constructs in patients who had educational programs based on health belief model education increased compared to those who did not receive this intervention. This suggests the effectiveness of educational intervention based on health belief model on the quality of life of diabetic pregnant women. Therefore, the hypothesis of the research that was effectiveness of education based on the health belief model on the quality of life of women with gestational diabetes, was confirmed.

Based on the findings of this study, knowledge of pregnant women about the factors affecting the quality of life during pregnancy in the intervention group was significantly higher than the control group after the educational sessions. These results were consistent with similar studies that have been done on pregnant women in different countries. As the study of Anderson in Scotland as well as Boyd and Windsor in the United States, education had improved the knowledge of nutrition during pregnancy [17, 18]

Also, many other studies have shown the effectiveness of education based on the health belief model in improving the knowledge of the subjects under study, so that the results of this study were consistent with the study of the Widga and Lewis [19], in which educational intervention had a positive effect on the behavior and knowledge of pregnant women, but in the study of Alizadeh et al. regarding changes in knowledge after intervention, there was no significant difference between groups [20].

Based on the findings of this study, more patients were aware of the necessities of healthy and hygienic behaviors and increase of knowledge is

necessary for health behaviors[21]. Therefore, it is necessary to increase the knowledge of diabetic pregnant women (especially about the effect of nutrition and proper physical activity during pregnancy on the development of the fetus and the emphasis on the disadvantages of unhealthy

lifestyle during this period). However, only raising knowledge for adopting health behavior is not enough and other components are effective [22].

Also, the mean score of mothers' behavior in the intervention group increased significantly. This change in the mean score of before and after intervention in the intervention group was statistically different with the change in the mean score of before and after interventional behavior in the control group which indicates the effect of a health education based on a health belief model in changing the development of positive behaviors.

In the study of Kamalifard [23], Artinians [24] and Tsorbatzoudis [25], education significantly improved the nutritional behaviors of women, as well as in the study of Kloebler and Batish, aimed to determine the application of the health belief model in changing the behavior of patients with diabetes, the results showed a significant effect of education based on the health belief model in changing the behavior of diabetic patients [26].

In this study, diabetic pregnant mothers in the intervention group were susceptible to the consequences of poor quality of life. However, there was no significant difference in the control group before and after the intervention. The significance of the difference in this study shows the effect of educational program based on health belief model that makes mothers susceptible to proper and hygienic behaviors. The study of Taghdisi et al. [27], Sharifirad et al [28], Lin [29] and Buglar [30] were consistent with our study.

In the intervention group, mothers received higher perceived severity after intervention, with an increase in mean scores of perceived severity after education that were consistent with various studies [31, 32].

In this study, diabetic pregnant mothers experienced a significant increase in perceived benefits after intervention. Increased perceived benefits can play an important role in preventing harmful health behaviors. The study conducted by Canbulat and Uzun [33], Lagampan [34], and Austin [35] were consistent with the results of our study. In this research, the mean score of self-efficacy was measured high using the questionnaire. In the study of Alizadeh et al. [20] and Hossiennezhad et al. [36], self-efficacy in students' health behaviors showed a positive and significant relationship according to bivariate regression. Sharifirad et al. revealed significance increase in the HBM

structures in relation to nutritional education of diabetic patients based on the health belief model [38] that was consistent with the study of Bayat *et al.* [39]. Also, increase of perceived severity is one of the predictive factors in adopting appropriate health behaviors [40].

CONCLUSION

The results of this study showed that education based on health belief model has a positive effect on the quality of life of diabetic pregnant women. It is suggested to provide some educational opportunity for patients with diabetes in any time e.g. during visit and staying at hospital for treatment.

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