

THE EFFECT OF PHYSICAL ACTIVITY TRAINING THROUGH FOCUSED GROUP DISCUSSIONS ON FASTING BLOOD GLUCOSE LEVEL ON PREGNANT WOMEN WITH GESTATIONAL DIABETES

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Abstract. Field and objective: gestational diabetes refers to a condition in which the level of blood glucose increases during pregnancy and symptoms of diabetes are seen in pregnant women who have already been diagnosed with diabetes. Women are quite vulnerable to diabetes due to their special physical, mental, behavioral and physiological characteristics. The present study has aimed to examine the effect of diabetes prevention education programs using focused group discussions on pregnant women who had visited the health care centers of Bardsir city in 2016. Materials and methods: this study is a semi-experimental research with one pre-intervention and post-intervention group. The statistical population of this study is composed of pregnant women covered by Bardsir health centers. The research sample consists of 40 pregnant women who had visited these health centers who were qualified to participate in the study. The tools used in this study were a checklist and maternal demographic characteristics questionnaire. Firstly, the required data was collected using the aforementioned questionnaire and checklist. The experimental intervention was developed for mothers during 6 sessions using the group discussion method. Then, after 2 months, the data were gathered once again using the checklist and then they were compared with the data gathered before the intervention. Data analysis was done using the SPSS ver.20 and descriptive statistics such as mean, standard deviation and frequency as well as inferential statistics including statistical tests such as paired t-test, independent t-test and ANOVA. The significance level in this research was $P < 0.05$. Findings: age mean of the pregnant women under study was 27.77 years with the standard deviation of 8.58 years. 87.5% of these women were housewives and the academic level of 55% of these women was lower than a high school diploma. According to the post-intervention results, the mean blood sugar of the pregnant women diagnosed with gestational diabetes was significantly reduced ($P < 0.001$). Conclusion: according to the results of this study, mothers' participation in physical activity training programs using focused group discussions on the reduction of the fasting blood sugar level of pregnant women is quite effective on the obtained results. Thus, educating the mothers and making them more aware using focused group discussions is recommended as a good strategy for reducing the fasting blood sugar level of pregnant women diagnosed with gestational diabetes.

Keywords: Fasting Blood Sugar, Gestational Diabetes, Focused Group Discussion, Physical Activity

1. INTRODUCCIÓN

Gestational diabetes is a disorder associated with tolerating carbohydrates which is diagnosed during pregnancy for the first time (Metzger BE et al., 2007). Although pregnancy is a time when human body faces difficulties tolerating carbohydrates, this disease is developed in a large number of pregnant women (3% to 7%)(Xiong X et al., 2001). This disease is a health problem that is becoming more and more common all around the world and it is one of the most prevalent side effects of pregnancy (Nguyen BT et al., 2012). Diabetic pregnant women are divided into two different groups: the ones who are diagnosed with pre-existing diabetes who might be diagnosed with diabetes type I or type II are in the first group. The members of the second group are individuals who are firstly diagnosed with diabetes during their pregnancy (gestational diabetes). In 30-50% of all cases, the disease turns into diabetes type II and in some rare cases, it becomes quite similar to diabetes type I (Sweeney AT et al., 2001) According to the estimations of the World Health Organization, the prevalence of this disease will be approximately 1.5 times more than its prevalence in 2000 by the year 2035 (O'sullivan JB et al., 1964). Currently, in Iran, 2.5 million individuals suffer from diabetes (Mohammedi S et al., 2011) Prevalence of diabetes in Iran is equal to 4.5% (Keshavarz M et al., 2005; Larijani B et al., 1999; Hossein-Nezhad A et al., 2007). Nowadays, doing a screening test for gestational diabetes is recommended to pregnant women in order to

reduce the risk of this disease for both the mother and the fetus. The solution recommended in the fifth international conference on gestational diabetes in association with gestational diabetes screening is to review the risk factors related to gestational diabetes in all pregnant women in their first visit. Some of the low-risk groups are: low-risk races and ethnics with low diabetes prevalence, women whose close relatives have not been diagnosed with diabetes, women who are younger than 25, women with natural weight before their pregnancy, and natural weight at birth, those who don't have a record of midwifery side effects or blood sugar disorders. These women are not required to do a blood sugar test. Women who are at moderate risk must be screened during the 24th – 28th week of their pregnancy with 50 grams of oral glucose (GCT). In case of any unnatural response, the patients must either take an oral glucose tolerance test (OGTT) or they must only

take the oral glucose tolerance test (OGTT) in the first place. Women who are at maximum risk are the obese ones, have a record of diabetes, or suffer from glucose metabolism disorder and they must be assessed as soon as possible based on the predetermined instructions. If the results of the test are negative, they must take the test again in the 24th – 28th week of their pregnancy or whenever the patient shows some symptoms of the disease. If the results show that the values of the OGTT are equal to 2 or higher than the recommended values, the individual would be diagnosed with gestational diabetes (Metzger BE et al., 2007). Risk factors of gestational diabetes are: old age and overweightness of the mother at the time of giving birth or before the pregnancy, having a record of diabetes in the family especially close relatives, history of giving birth to a macrosomic child or a child with abnormalities, or a family history of unjustifiable preterm birth (Di Cianni G et al., 2003; Solomon CG et al., 1997). Accurate and sufficient physical activity during pregnancy has a substantial positive effect on the health of both the mother and the fetus (Stuebe AM et al., 2009) Skeletal muscles and adipose tissues become resistant to insulin in the second half of pregnancy (Barbour LA et al., 2007). Since exercising has metabolic effects, it is an effective way for preventing or treating gestational diabetes. Exercising regularly can improve how the blood glucose of patients with gestational diabetes is controlled (Porte D, 1991). In societies where inactive lifestyle is common among people, reduction of physical activity and reception of more calories are more prevalent than in other societies (American Diabetes Association, 2003). Mahib Moeeni et al. in 2014 conducted a research called reviewing the effect of resistance exercises on the non-fasting blood glucose of patients with coronary artery disease in cardiovascular research center of Isfahan and studied 40 patients. They came to the conclusion that resistance exercises reduce the mean non-fasting blood sugar of patients. Therefore, they can be recommended along with medicinal treatment for reducing the blood sugar of patients with coronary artery disease (Moeini M et al., 2014). Using focused group discussion is a method for providing solutions and for collecting the required information. Focused group discussion is a semi-structural group session which is guided by the group leader and is held unofficially with the purpose of providing solutions and collecting information about something specific (Streubert Speziale HJ et al., 2007). When this method is used, individuals are able to describe their feelings and their behaviors (Halcomb EJ et

al., 2007). In the focused group, the emphasis is put on the interaction between the group members and the facilitator doesn't ask the questions and the group members are encouraged when they talk about one another and interact with each other (Wong LP ,2008). The main feature of the focused group which differentiates it from other groups is the information that is obtained from the interactions between the participants. It is believed that participants not only answer the questions asked by the interviewer, but they also respond to other participants. In the group interview, dynamicity of the group adds to the quality and quantity of the information (Halcomb EJ et al., 2007). In different areas of health care, the focused group is a proper method for discovering the beliefs related to risky and dangerous behaviors and to search for the general understanding of the causes of diseases (Wong LP ,2008). In a study done by Akaberian et al., called evaluating the effective factors on non-exclusive breastfeeding in the first six month of the life of infants in Bushehr Port using the focused group discussion in 2003, it was concluded that educating pregnant women through focused group discussions can give them inclusive information about non-exclusive breastfeeding (Akaberian S et al., 2004). Given the importance of gestational diabetes treatment and screening for preventing gestational diabetes and the side effects of it for the mother and the fetus, and also because of the fact that not enough studies have been done on educating diabetic patients using focused group discussions, the present study was designed and conducted with the purpose of reviewing the effect of physical activity training using focused group discussion on the fasting blood sugar level of pregnant women diagnosed with gestational diabetes who had visited the health care centers of the city Bardsir.

2. MATERIALS AND METHODS

This study is a semi-experimental research with one pre-intervention and post-intervention group. The statistical population of this study is composed of pregnant women suffering from gestational diabetes who had visited health care centers of Bardsir. 40 of these pregnant women who had visited health care centers of Bardsir in 2016 were randomly selected as the research sample with the probability of a 10-percent fall of the samples. Multistage randomized sampling method has been used in this research; meaning that firstly, the researchers had a list of all of the health care centers of the city Bardsir and then, they randomly selected one of these centers given the estimated

sample size. Some of the criteria for participating in the study were as follows: being in the 24th week of pregnancy, being diagnosed with gestational diabetes, not having a history of systematic diseases or being medically banned from doing any kind of physical activity. After providing the participants a full explanation about the research objective, they were asked to sign a consent. Following this, the schedule of the sessions was announced. Next, then intervention group was divided into eight groups of 12 participants and the time and place of the group sessions were announced. Then, researchers interviewed the participants and asked oral questions in order to collect the necessary information about the physical activities, personal characteristics and medical history. In this stage, the preliminary information obtained from the educational interventions throughout 4 sessions (a session per week) were analyzed based on the specified plans and then 2 months after holding focused group discussion sessions, information were collected again and the new results were compared with the results obtained before the intervention. Educational intervention lasted 45 to 90 minutes using the focused group discussion method. Data analysis was done using the SPSS ver.20 and descriptive statistics such as mean, standard deviation and frequency as well as inferential statistics including statistical tests such as paired t-test, independent t-test and ANOVA. The significance level in this research was $P < 0.05$.

3. FINDINGS

Research findings show that most of the women under study were housewives, did not have a high school diploma, were older than 25 and had 2 or 3 children.

In this study, the effect of physical activity training using the focused group discussion method on pregnant women diagnosed with gestational diabetes was reviewed and in total, 40 pregnant women with the mean age of 27.77 ± 8.58 years participated in the study. Table 1 displays the demographic characteristics of mothers before the intervention (table 1).

Table 1. demographic characteristics of mothers under study

Job	Number	Percentage
Housewife	35	87.5
Employed	5	12.5
Academic level	Number	Percentage
Lower than diploma	22	55

Diploma	14	35
University education	4	10
(4-5)	5	12.5
Age group	Number	Percentage
18-25	5	12.5
25-35	7	17.5
>35	28	70
Number of children	Number	Percentage
(1-2)	13	32.5
(3-4)	20	50
>5	2	5

The results obtained from comparing the pre-intervention data and the post-intervention data, it became clear that physical activity training using the focused group discussion method significantly reduces the fasting blood sugar of pregnant women diagnosed with gestational diabetes ($P < 0.001$) which is an indication of the effect of this type of education.

Index Stage	FBS(mg/dl)		Mean difference	Results of the paired t-test
	Mean	Standard deviation		
Pre-intervention	117.52	77.41	+60.69	T=8.60
Post-intervention	178.21	23.11		P<0.001

4. DISCUSSION AND CONCLUSION

The findings of the present study have shown that 2 months after the execution of physical activity training program using the focused group discussion method, the fasting blood sugar level of the mothers reduces and this reduction is significant. of course, although no study in this regard was found, but other similar studies have shown that physical activity training can reduce the symptoms of gestational diabetes. There were two clinical trials that have reviewed the effects of exercising and being physically active on resistance to insulin, blood sugar and insulin level of healthy pregnant women (Porte D ,1991; American Diabetes Association,2003). (Hopkins et al., 2010). have studied the effects of exercising in the second half of pregnancy on mother's sensitivity to insulin. In addition, Kalavari et al. haven't reported a significant difference after the interventions. However, they have observed a

significant difference in the level of fasting blood glucose and insulin of the pregnant women in the 28th and 36th week of pregnancy and these results comply with the results of our study. Physical activity, as a factor that plays a role in increasing sensitivity to insulin, improves the functioning of insulin in animals and people who are resistant to insulin (Weir GC et al., 2004); although, its impact on the mass and performance of beta cells and secretion of insulin in women diagnosed with gestational diabetes has not been taken into consideration. However, based on the findings of the present study as well as the previous studies on diabetes type II, it can be concluded that physical exercises not only reduce body's resistant to insulin, but they also improve glucose homeostasis by increasing the mass and performance of beta cells. These findings show that physical activities probably improve insulin secretion and increase the absorption of glucose in women with gestational diabetes. Standard physical exercises increase the metabolic health of these patients by increasing the level of consumed energy and the oxygen that is consumed after doing the exercise.

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