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The effect of couple supportive counseling on self-efficacy in women with insulin-treated gestational diabetes: A randomized clinical trial

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Abstract:

BACKGROUND: Gestational diabetes is the most common medical complication and a common metabolic disorder during pregnancy. Increasing people's self-efficacy is one of the best ways to control this disease. As there is a lag of intervention in this regard, the purpose of this study was to determine the effect of couple supportive counseling on self-efficacy in women with insulin-treated gestational diabetes.

MATERIALS AND METHODS: In this randomized clinical trial, 64 women with gestational diabetes who referred to diabetes clinic of Mashhad Ommolbanin Hospital were divided into intervention and control groups through block randomization during 2019. Their gestational age was in 26–30 weeks. For the couples in the intervention group, three couple supportive counseling session was held. Each session lasted 1 h and was held one time per week. The instruments were diabetes self-efficacy questionnaire, fasting and 2-h postprandial checklist and Cassidy social support, which were assessed before and 4 weeks after intervention in both groups. Data was analyzed by SPSS software version 25 through Mann–Whitney and Wilcoxon test. *P* values of < 0.05 were reported to be significant.

RESULTS: In the preintervention, the diabetes self-efficacy score had no significant difference in the intervention (30/6 ± 38/50) and control groups (09/8 ± 56/51) (*P* = 515/0). However, in the postintervention, the diabetes self-efficacy score was significantly higher in the intervention group (58/6 ± 41/71) compared to the control group (15/7 ± 31/51) (*P* < 001/0). Also, before the intervention, there was no significant difference between the intervention (30/2 ± 72/10) and control group (87/1 ± 63/11) (*P* = 137/0) regarding social support. However, after the intervention, there was a significant difference between the intervention and control groups (879/0 ± 53/13, 03/2 ± 41/11, *P* < 0/001 respectively). Also, data analysis showed a significant correlation between self-efficacy and social support ($r = 0.451$, $P < 0.001$), self-efficacy and fasting blood sugar ($P < 0.001$, $r = -0.577$), and 2 h post prandial ($r = -0.778$, $P < 0.001$).

CONCLUSION: Couple supportive counseling leads to increased self-efficacy and social support in pregnant women with gestational diabetes. Therefore, it is recommended to use this counseling as an effective method in the management of diabetic pregnant women during their prenatal care to have a healthier pregnancy.

Keywords:

Counseling, gestational diabetes, pregnancy, self-efficacy

Introduction

Gestational diabetes, with its prevalence increasing worldwide, is the most common and important medical complication during pregnancy.[1] This matter is one of the major health problems, in which the World Health Organization reporting that by 2030,

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the number of diabetic people (including pregnant women) is expected to be twice.[2]

The global prevalence of gestational diabetes, which is the state of glucose intolerance that begins or diagnosed during pregnancy, has been reported one in seven pregnant mothers in 2015, and in Iran, it is between 1.3 and 18.6%.[3-5] As half of pregnant mothers with gestational diabetes would develop type 2 diabetes in the next 20 years, so it implies the necessity to control and treat the disease.[6,7]

Over 35 years old pregnancy, obesity (body mass index (BMI) ≥30), history of glycosuria or glucose metabolism disorder, family history of diabetes, and history of abnormal outcome of previous pregnancies (such as miscarriage, stillbirth, macrosomia or weight over 4 kg, prematurity, preeclampsia) are risk factors for gestational diabetes.[8]

Gestational diabetes, as a silent disease, has many adverse effects on the mother and fetus, which leads to adverse pregnancy and childbirth outcomes.[9]

In this way, one of the main and most important strategies for controlling, treating, and reducing the morbidity and mortality related to types of diabetes is empowering patients regarding lifestyle modifications.[10]

It is worthwhile to mention that an important prerequisite for lifestyle modification is self-efficacy, and it is less likely for people with low self-efficacy to perform proper health behaviors or change behavior.[11,12] People with a high level of self-efficacy have a greater commitment to lifestyle modification, which leads to greater success in doing things.[11]

Self-efficacy is one of Bandura's cognitive-social theory constructs and the most powerful construct in predicting personal behavior change. Self-efficacy is personal beliefs about ones' ability for doing things.[10,11] In other words, self-efficacy is a good framework for understanding and predicting a patient's commitment to have proper behavior for the treatment of diabetes. Problems and complications associated with behavior change to manage and control diabetes require high self-efficacy.[13,14] It has been stated that in diabetic patient self-efficacy plays an important role in their attitude toward this disease.[15] According to existing studies, people with appropriate family support and higher self-efficacy are more successful in controlling and treating different types of diabetes.[16]

As it has been resulted, counseling plays an important role in the management and control of chronic diseases such as diabetes.[17] Among the various counseling methods available, increasing the sense of self-efficacy is one of the goals of supportive counseling.[18] This type of counseling enhances the sense of self-efficacy and ability to do things in patients by emphasizing their abilities and encouraging talents and supporting proper coping strategies.[19]

In a study by Bakhteh *et al*. (2018),[20] which aimed to determine the effect of cognitive behavioral counseling on self-efficacy in women with gestational diabetes, this counseling method increased the self-efficacy of women with gestational diabetes. Karimy *et al*. (2018) identified family support as an important predictor of promoting self-efficacy and self-care behaviors.[21]

In these studies, the intervention was on the women and their spouses as a supportive source was not considered. It is worthwhile to mention that there are many factors that affect self-efficacy, but no study has tried to improve it by increasing the awareness of the husband and emphasizing their ability, and the potential of spouses in women with insulin-treated gestational diabetes is not sufficiently used to increase the support and empowerment of these patients. The other matter is that it has been concluded that midwives have an inconspicuous role in this way, while they should design interferences to boost the self-efficacy of diabetic pregnant women.[15] Midwives, as counselors, could play an essential role in supporting mothers. Midwives can improve and modify the lifestyle of mothers with gestational diabetes and reduce their complications of gestational diabetes by counseling in health centers.[22] Therefore, the present study aimed to determine the effect of couples' supportive counseling on self-efficacy in women with gestational diabetes.

Materials and Methods

Study design and setting

This randomized clinical trial study was performed during 2019 on women with insulin-treated gestational diabetes who referred to the diabetes clinic of Mashhad University of Medical Sciences, Mashhad, Iran.

Study participants and sampling

In this research, sample size was calculated based on pilot study on 20 research units (10 intervention group, 10 control group) with 95% confidence interval and 80% power using mean comparison formula ($n = \frac{(S_1^2 + S_2^2) \times (Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2}{(\bar{X}_1 - \bar{X}_2)^2}$), 30 subjects in each group including falling Samples were increased to 36 in each group (72 in total).

The sampling method was simple and accessible and the allocation of research units to groups (intervention and control) was randomly blocked.

Inclusion criteria

The inclusion criteria include the following: Iranian nationality, gestational diabetes type A2, verbal communication, written consent, 26–30 weeks gestation based on first trimester ultrasound or LMP, residence in Mashhad, having at least elementary fifth literacy, telephone access, spouse willingness to participate in research, couples are not hospital staff, no smoking and alcohol use, lack of medical illnesses, high risk pregnancy, and corticoid use; lack of mental disorders, lack of prior obesity from pregnancy (BMI ≥30), and lack of stressful events occurred during the past 6 months.

Exclusion criteria included

Exclusion criteria included the following: unwillingness of couples to continue to attend the study, absence of pregnant mother or spouse in any counseling sessions, failure to complete questionnaires, occurrence of specific medical conditions that make it impossible to continue the study, and occurrence of stressful events during the implementation of the research.

Eight of the research units (three due to unwillingness to cooperate in the study, two due to not completing the questionnaires, and three due to hospitalization) were excluded, and 64 women with insulin-treated gestational diabetes participated until the end of the study [Figure 1].

Data collection tool and technique

Data collection tools included the following: Demographic and midwifery questionnaire, fasting blood sugar and 2 h postprandial checklist, diabetes self-efficacy questionnaire, and Cassidy Social Support Questionnaire.

The demographic and midwifery questionnaire consisted of 27 questions that its validity was confirmed by content validity method. To measure patients' self-efficacy, the Diabetes Self-efficacy Scale was designed by the Stanford University of America Research Center and included eight questions. Scores for each question range from 1 (I'm not sure) to 10 (I'm pretty sure) on a Likert scale. If no more than two questions are answered, the questionnaire will not be scored. The total score range of this questionnaire is between 8 and 80, with the highest score indicating the highest self-efficacy.

The validity of this questionnaire was confirmed by content validity and its reliability was confirmed by Cronbach's alpha coefficient $\alpha = 0.72$. The modified Cassidy Social Support Assessment Questionnaire contains seven questions with answers ranging from zero. The total score of the questionnaire is 0–14, with the highest score indicating the highest perceived social support. The validity of this questionnaire was confirmed by content validity, and its reliability was confirmed by Cronbach's alpha coefficient $\alpha = 0.64$.

After confirming the Vice Research and the ethics committee of the university and receiving a letter from Mashhad School of Nursing and Midwifery and presenting it to hospital authorities and obtaining permission, the researcher referred to the diabetes clinic. First, the purpose of the study and general information about the study method and the confidentiality of the information were described for the research units, and then written consent was obtained from them.

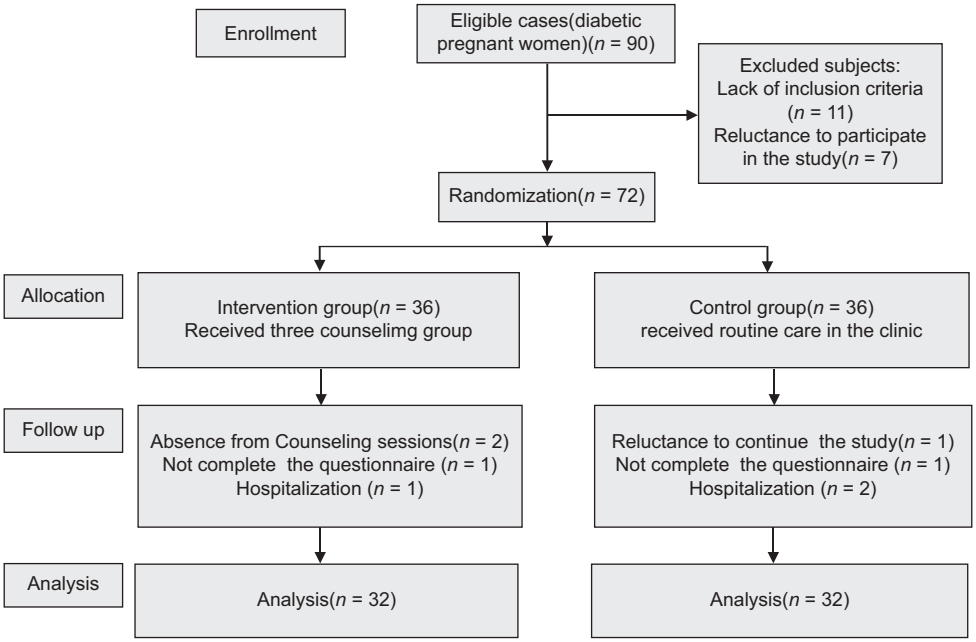

Figure 1: Flowchart of the intervention process in the two groups

Then, the demographic questionnaire, social support, and self-efficacy questionnaire were given to eligible individuals and fasting blood glucose and 2 h postprandial tests were performed for the research units.

After completing the questionnaires, three sessions of supportive counseling with pregnant mothers and their spouses were performed for the intervention group.

The consultation was conducted by a master student of counseling in midwifery in three 60-min sessions with a 1-week interval at the diabetes clinic of Ommolbanin Hospital. The first session was designed to familiarize couples with the topic of research discussion and the importance of self-efficacy in lifestyle modification. The second session, while encouraging couples to emphasize their abilities and talents in gestational diabetes control strategies, was used to increase the self-efficacy of pregnant mothers using a reassuring supportive technique, and Jacobson's relaxation technique was trained to last 10 min. The practice of this relaxation technique was practiced. The third session explored the barriers to diabetes control strategies, and the couples were encouraged to develop a workable program of nutrition, physical activity, medication, and blood sugar monitoring to improve behavior. The control group received routine care in the clinic. One month after intervention, fasting blood glucose testing and 2 h post prandial were taken from the research units of Ommolbanin Hospital Lab and the researcher provided the next version of the Diabetes Social Support and Self-efficacy Questionnaire to complete by the research units.

Ethical considerations

In this study, ethical considerations like getting informed written consent, providing information on the process and stages of counseling and number of sessions, ensuring the confidentiality of what is expressed during the counseling sessions, and the couple's freedom to leave the study at any stage of the research have been done. The present article is the result of a master's thesis approved by Mashhad University of Medical Sciences (IR.MUMS.NURSE.REC.1397.035).

Statistical analysis

Data analysis was performed using SPSS software (version 25). The descriptive statistics (mean, standard deviation, frequency distribution), Mann–Whitney, Wilcoxon, Chi-square, and Fisher exact tests were used for analysis. *P* value less than 0.05 was considered significant.

Results

The results showed that the two groups were not statistically significant and were homogeneous in terms of variables like age, gestational age, BMI ($P > 0.05$) [Table 1].

The mean score of gestational diabetes self-efficacy before intervention was not statistically difference between the two groups) $P = 0.515$), but after intervention, it had significant difference ($P < 0.001$) and was higher in the intervention group [Table 2].

Also, there was a significant difference between the mean score of gestational diabetes self-efficacy in the intervention group before and 1 month after the intervention ($P < 0.001$), but there was no significant difference in the control group before and 1 month after intervention in this regard ($P = 0.781$).

Comparison of the mean difference of gestational diabetes self-efficacy scores during the study (before and one month after intervention) showed that there was a significant difference between the two groups ($P < 0.001$) [Table 2].

The results of data analysis also showed that there was a significant direct correlation between self-efficacy and social support ($r = 0.451$, $P < 0.001$), meaning that the higher the level of social support, the more self-efficacy increases [Table 3]. There was also an inverse correlation between self-efficacy and fasting blood sugar ($r = -0.577$, $P < 0.001$,) and 2 hours post prandial ($r = -0.778$, $P < 0.001$). The higher the self-efficacy, the lower the blood sugar level [Table 4].

Table 1: Comparison of individual characteristics of research units at baseline

Variable group	Unit of measurement	Intervention	Control	Test results
Maternal age (years)	SD±mean	31/22±5/90	31/31±5/95	*P=0/950
Pregnancy age (weeks)	SD±mean	28/38±1/33	28/75±1/21	**P=0/231
Body mass index (kg/m^2)	SD±mean	25/69±2/03	25±2/61	**P=0/444
Number of children	SD±mean	1/03±0/99	1/34±0/86	**P=0/193
History of gestational diabetes	Has	(21/9%) 7	(28/1%) 9	***F=0/774
	Does not have	(78/1%) 25	(71/9%) 23	
Family history of type 2 diabetes	Has	(43/8%) 14	(65/6%) 21	****P=0/079
	Does not have	(34/4%) 11	(56/3) 18	

**Independent *t*-test, **Mann-Whitney, ***Fisher, ****k^2

Table 2: Mean and standard deviation of self-efficacy score before and 1 month after intervention by group

Variable	Time	SD±mean		Test result
		Intervention	Control	
	Before the intervention	50/38±6/30	51/56±8/09	Independent *t*-test *t*=-0/655 df=62 *P*=0/515
Gestational diabetes self-efficacy	One month after intervention	71/41±6/58	51/31±7/15	Mann-Whitney *Z*=-6/41 *P*<0/001
	Average changes before and 1 month after the end of supportive counseling	21/03±7/59	-0/25±2/91	Mann-Whitney *Z*=-6/58 *P*<0/001
Test result	Wilcoxon	*Z*=-4/93 *P*<0/001	*Z*=0/278 *P*=0/781	

Table 3: Correlation of self-efficacy with social support

Variable	Social support
Self-efficacy	*r*=0/451 *P*>0/001

*Spearman

Table 4: Correlation of self-efficacy with fasting blood sugar and two hours post prandial

Variable	FBS	2 hpp
Self-efficacy	*r*=-0/577 *P*<0/001	*r*=-0/788 *P*<0/001

*Spearman

Discussion

The purpose of this study was to determine the effect of couple supportive counseling on self-efficacy in women with insulin-treated gestational diabetes. Results showed that self-efficacy of gestational diabetes patients in the intervention group was significantly higher than the control group 4 weeks after the intervention.

The clinical trial study of Bakhteh *et al*. (2018)[20], which aimed to determine the effect of cognitive behavioral counseling on self-efficacy in women with gestational diabetes, was in line with the present study. The results of this study showed that this counseling method increased self-efficacy in women with gestational diabetes mellitus. In this study, identifying dysfunctional thoughts about gestational diabetes and replacing it with efficient beliefs and thoughts led to increased self-efficacy in the intervention group. An attempt was made to identify dysfunctional emotions and thoughts and to attempt to modify these thoughts and replace them with efficient thoughts. This was similar to the present study, which could be a good justification for the two studies.

Kordi *et al*. (2017)[23] identified self-efficacy as a predictor of self-care behaviors and health promotion in women with gestational diabetes. Due to the direct relationship between these two variables and the average level of self-efficacy in women with gestational diabetes, the importance of psychological interventions for the treatment of gestational diabetes should be taken into account.

In Bastani *et al*. (2010)[2] study, self-efficacy was mentioned as one of the prerequisites for self-care in gestational diabetes mellitus. Due to the low self-efficacy of people with gestational diabetes, educational-counseling strategies can increase self-efficacy in these patients to improve self-care and promote their health.

The study by Lachini *et al*. (2012)[24] aimed to determine the effect of self-efficacy training on HbA1C control in type 2 diabetes mellitus was in agreement with the present study. In this study, 58 patients with type 2 diabetes (28 intervention, 30 control) participated in nine sessions of 45 min in group cognitive-behavioral self-efficacy training. The results of this study showed that self-efficacy training can promote self-efficacy and decrease blood sugar in type 2 diabetic patients.

The study of Rasouli *et al*. (2013)[25] was also in line with the present study. This study aimed to compare the effect of self-empowerment training program through a training package and a workshop on self-efficacy in diabetic patients referred to Diabetes Center of Urmia University of Medical Sciences. Training package improves self-efficacy of patients.

The study by Tol *et al*. (2012) was also in line with the present study. This study aimed to evaluate the empowerment model based on education program on promoting self-efficacy and its relationship with diabetes control in patients with type 2 diabetes mellitus stated that empowerment-based training in the intervention group with group problem solving strategies is more effective than conventional diabetes training in self-efficacy and diabetes control.[26]

In these studies, which are in line with our study, the reason is that in all these research the intervention (training) was applied with aim of promoting self-efficacy by focusing on raising awareness and correcting misinformation through a regular session, using the potential possibilities like spouse in our study and exchange of views between consultants and clients as our study as well.

Hejazi *et al*. (2017)[14] conducted a study to evaluate the effect of self-efficacy theory education on health literacy, self-efficacy, and self-care behaviors of type 2 diabetic patients. During this study, patients with type 2 diabetes received self-efficacy theory training, and the results showed that self-efficacy theory-based educational intervention was effective in improving self-efficacy, health literacy, and self-care behaviors of patients with diabetes.

Providing information and education is part of the counseling process, and the researcher has dedicated time to providing information about the importance of self-efficacy and its positive consequences for diabetes control, and using counseling techniques to try to increase the self-efficacy of patients with diabetes. This was similar to Hejazi's study with the present study, which led to concordant results.

Karimy *et al*. (2018) study aimed to determine the relationship between attitude, self-efficacy and social support, and adherence to diabetes self-care behaviors was in line with other studies, which showed that increasing social support and self-efficacy promotes self-care behaviors in patients with type 2 diabetes.[21]

In overall, those interventions that increase the responsibility of diabetic pregnant women, their preventive behaviors, and, therefore, their life style have been recommended to improve the maternal and fetal outcome and, therefore, reduce the adverse effect of gestational diabetes.[27,28] In line with our intervention, it has been stated that couples' supportive counseling would help to gain this purpose.[29]

One of the strengths of this study was the potential use of husbands of pregnant women with gestational diabetes. Also, using a midwife's low-cost counseling method which can be used during prenatal care was another strength of this study. The clinic at Ommolbanin hospital makes it possible to generalize the results to the whole community because of the ease of access to mothers' referrals from various health centers throughout Mashhad.

Limitation and recommendation

One of the limitations of the study was the individual differences of the research participants, which were partly controlled by random allocation. Also, it was not possible for the researcher to be blinded to the research units because of the holding of consultation session. Based on the results doing further studies regarding the comparison of the effect of other counseling method with supportive counseling on self-efficacy of women with gestational diabetes and also utilization of supportive counseling for other condition during pregnancy has been recommended.

Conclusion

Couple's supportive counseling had impressive impact on the self-efficacy and social support in the pregnant women with insulin-treated gestational diabetes. Also, follow applying this counseling method it has been revealed that higher self-efficacy in diabetic pregnant women is correlated inversely with fasting blood sugar and 2 hours post prandial. It is recommended to use this counseling method in the management of diabetic pregnant women in their prenatal care to increase diabetes self-efficacy and its related consequence like fasting blood sugar and 2 hours post prandial, which have important impacts on their morbidity and mortality.

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Conflicts of interest

There are no conflicts of interest.

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