Advances in Nursing and Midwifery Original Article
Summer 2020, Volume 29, Issue 21 (27-33)

Prediction of Self-Efficacy of Women with Gestational Diabetes Based on Coping Styles with Stress

Masoumeh Kordi [1], **Mahsima Banaei Heravan** [2,*]

[1] Assistant Professor of Midwifery, Research Center of Evidence-Based Care, Faculty of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
[2] Instructor, Department of Midwifery, Pregnancy Health Research Center, Zahedan University of Medical Sciences, Zahedan, Iran and M.Sc. in Midwifery, Faculty of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

**Corresponding author: Mahsima Banaei Heravan, Instructor, Department of Midwifery, Pregnancy Health Research Center, Zahedan University of Medical Sciences, Zahedan, Iran. E-mail: kordim@mums.ac.ir*

DOI: 10.29252/anm-30672

Submitted: 29-11-2019
Accepted: 05-02-2020
Published: 15-04-2020

Keywords:
Gestational Diabetes
Self-efficacy
Coping, Stress

How to cite:
Kordi M, Banaei Heravan M. Prediction of Self-Efficacy of Women with Gestational Diabetes Based on Coping Styles with Stress. *Adv Nurs Midwifery*. 2020;29(**2**):27-33. doi: 10.29252/anm-30672

Abstract

Introduction: Gestational diabetes (GA) is a common complication associated with perceived stress and self- efficacy effectiveness on the commitment to self-care behaviors. Therefore, this study aimed to predict the self- efficacy of women with gestational diabetes based on coping styles with stress.

Methods: This study is a predictor correlation study that is done over 400 women with gestational diabetes attending to the clinic of hospitals related to Mashhad University of medical sciences and health centers in the city of Mashhad, Iran, in 2015. Data were collected by individual questionnaire, diabetic self- efficacy and coping styles questionnaire of Folkman and Lazarus. Descriptive Statistics performed data analysis, Spearman correlation coefficients test, Liner regressions model, and Multiple regression. A statistical significance was deemed present when the P-value was less than 0.05.

Results: The results of Spearman correlation coefficients test showed a significant direct correlation between problem-based coping style and self-efficacy, ($P < 0.0001$ and $r = 0.29$); but, there was no significant linear relationship with emotive-based coping style ($P = 0.105$ and $r = 0.08$), and according to Liner regressions model, just the problem-based coping style is considered as a predictor variable of self-efficacy ($P < 0.0001$, $\beta = 2.451$, and $F = 39.284$).

Conclusions: According to these findings, midwives can improve self-efficacy among women with gestational diabetes by encouraging them to apply problem-based coping styles with stress.

INTRODUCTION

Gestational diabetes is defined as any degree of glucose intolerance with onset or first recognition during pregnancy. It is a common metabolic disorder during pregnancy [1], and it is reported in about 7 percent of pregnancies in the United States [2]. In a meta-analysis study by Sayeh Miri et al. (2013), the prevalence rate in Iran was estimated at 4.9% [2]. Women with gestational diabetes are prone to type 2 diabetes, increased risks of childbirth, preeclampsia, and congenital anomalies following blood sugar control disorder [3]. Prevention of diabetes complications is highly dependent on the patient's desire for daily self-care [4], which includes a series of actions that a person does to promote health, prevent disease, assess symptoms, and maintain good health [5]. Self-care aims to maintain the blood glucose level in the normal range. Physical activities, nutritional behaviors, and monitoring blood glucose levels are often used as variables related to self-care for diabetic patients [6]. On the other hand, high self-efficacy predicts self-care behaviors in diabetic patients [7].

Self-efficacy is one of the structures of Bandura's cognitive-social model that refers to a person's beliefs about his or her ability to do things, and it comes from different sources, including successes

and failures of the individual, seeing the success or failure of others, and verbal persuasion. Moreover, it explains the interaction between individual, behavioral, and environmental factors in health and disease that are important in controlling diabetes [8]. People who have high self-efficacy believe that they can control the events of their lives effectively, and this feeling has a direct effect on their behavior [9]. Patients' accurate information about diabetes increases their self-confidence in self-care and high levels of self-efficacy that will lead to a modification of health behaviors [8]. As Anderson's study (2000) showed, people with diabetes, who had higher self-efficacy, had a positive attitude toward diabetes [10]. Bandura (1997) believes that self-efficacy affects all aspects of behavioral and emotional activities, such as anxiety and stress [11]. Also, forcing the patient to self-care causes many challenges in daily life that necessitates coping styles for adaptation [12].

According to Lazarus and Folkman's definition (1986) [13], coping styles are the endeavors of intellectual, emotional, and behavioral activities of a person that are used to cope with stress in order to overcome or minimize its effects [14], which include two categories: problem-based and emotive-based coping style. The former includes modifying or eliminating stress sources, looking for information, using problem-solving methods, and determining alternative rewards. The latter includes managing emotions that increase with stress or a stressor that includes emotional regulation, withdrawal, acceptance, and emotional discharge that enables a person to achieve significant peace [15].

According to a study in India, diabetic patients are less likely to use a problem-based coping style than healthy people in the face of stress [16]. On the other hand, the results of a study in Turkey showed that diabetic patients use the problem-based coping style and the emotive-based coping style to the same extent [17]. In another study, the average score of a problem-based coping style, obtained from women with gestational diabetes, was lower than the average total score of this coping style [18].

Based on studies by MacNeil et al. (2012) [19] and Morin et al. (2013) [20], there was a positive and significant relationship between perceived self-efficacy and problem-based coping styles, and there was a significant negative correlation between emotive-based coping styles and self-efficacy. Parto and Besharat (2011) found that the ability to solve problems has a positive and significant relationship with the feeling of self-efficacy [21]. Meanwhile, the results of Cheraghali Gol's (2017) research on high school students showed a positive and significant correlation between rational and emotional subscales of coping styles with stress and self-efficacy [22]. In a study conducted by Ghodrati Mirkohi (2016) on patients with type 2 diabetes, the results showed that the emotive-based coping style negatively predicted self-efficacy and that there was no significant relationship between self-efficacy and problem-based coping style [7].

There is little information about the self-efficacy of diabetic pregnant women [23] and the importance of coping styles in solving multiple tensions with diabetes [24], and no studies have been reported on the relationship between self-efficacy and coping styles in women with gestational diabetes in Iran; on the other hand, the results of previous research on psychological issues including coping styles have been different; Therefore, the present study aims to predict self-efficacy of women with gestational diabetes (criterion variable) based on coping styles with stress (predictor variables) in 2015 in obstetric clinics of public hospitals affiliated to Mashhad University of Medical Sciences (Omolbanin, Imam Reza, and Ghaem) and health-care centers in Mashhad.

METHODS

This study is a predicting correlation study that, in this study, coping styles are considered as predictor variables and self-efficacy as criterion variables.

After obtaining a license with the code IR.MUMS.REC.1394.137 from the ethics committee of Mashhad University of Medical Sciences, this study was conducted on 418 women with gestational diabetes referring to obstetric clinics of public hospitals affiliated to Mashhad University of Medical Sciences (Omolbanin, Imam Reza, and Ghaem) and health-care centers in Mashhad in 2015. The sampling method was multi-stage. First, health centers No. 1, 2, 3, Samen, and five were considered one class (all centers in Mashhad), and then from the list of existing centers (proportional to the total number of centers covered by each class), some centers were randomly selected as a cluster. From each cluster, several health centers were selected for sampling using the draw method according to the population (in proportion to the size), and the desired sample size was selected through convenient sampling from the selected clinics and health centers. The sample size was estimated to include 398 individuals based on the results obtained from a pilot study on thirty qualified women with gestational diabetes, and by considering the confidence level of 95% and test power of 80% and then by considering the loss of samples, 418 individuals were enrolled.

$$N = ((Z1-\alpha/2+Z1-\beta)/ C(r))\ 2+3$$

$$C(r) = \tfrac{1}{2} \log (1+r/1-r)$$

$$C\ (0.314) = \tfrac{1}{2} \log (1.314/0.686)=0.153$$

$$N = ((0.84+1.96)/0.141)\ 2+3=397.34$$

Inclusion criteria were as follows: the individuals must be Iranian and the resident of the city of Mashhad who has completed at least elementary education, gestational diabetes has been diagnosed by a doctor, they had a singleton pregnancy. Exclusion criteria included: they were addicted to drugs, had a history of being involved with other medical and mental conditions, had infertility history, had a history of an abnormal baby or fetus, a study in medical sciences, the individuals were suffering from speech and hearing disorders that impede the communication with the researcher, advertising events occur six months before the start of the study, lack of willingness to continue working together.

Data collection tools included a personal information questionnaire, self-efficacy on diabetes, and a Folkman and Lazarus coping styles questionnaire. The personal information questionnaire was the result of a review of studies, and the researcher had made it.

The self-Efficacy questionnaire for diabetic patients was designed by Stanford University Research Center [25], and it was used in an Iranian study [23] on self-efficacy in pregnant women. The questionnaire has eight questions with scores ranging from one to ten on a Likert scale, and the answers are categorized as one (I am not at all sure) to ten (I am sure). By calculating the total score of 8 items, the self-efficacy score is obtained; and if no more than two questions are answered, the questionnaire will not be graded. Overall, the range of scores is between 8 and 80, and higher scores indicate greater self-efficacy. Thus, individuals were divided into three categories based on the scores received: low (8-32), moderate (33-56), and sound (57-80).

The Folkman and Lazarus coping styles questionnaire is a 66-item questionnaire whose answers are set at a four-point Likert scale from I have not used it at all = 0 to I am using it a lot = 3. This questionnaire contains two subscales of problem-based coping styles (23 questions) and emotive-based coping styles (27 questions). According to the instructions provided by Folkman and Lazarus, 16 questions are not used in the calculation of subscales. Therefore, the minimum score is 0, and the maximum is 150.

The score of problem-based coping styles is obtained from the sum of the scores of looking for social support, responsibility, scheduled problem-solving and positive reassessment. The minimum score for problem-based styles is 0, and the maximum is 69.

The score of emotive-based coping styles is obtained from the sum of the scores of confrontation, continence, avoidance, and escape–avoidance. The minimum score is 0, and the maximum is 81.

Since the number of questions in the problem-based coping style and the emotive-based coping style was not the same. The answers were 4-point Likert scale, in order to equalize the total score of the problem-based coping style and the emotive-based coping style, first, the score obtained from each style was divided into the number of questions of that style. In other words, the final score of the problem-based and emotive-based coping styles was determined at 0-3, and the score of the coping style (problem-based or emotive-based), which was higher, was considered the dominant coping style used by the individual [15].

The coping style questionnaire is a useful tool confirmed by Lazarus (1993) [26]. In Iran, after translating it into Persian, Alipour et al. (2010) confirmed its validity through content validity [27]. The validities of the research unit selection form, demographic questionnaire, self-efficacy, and coping style questionnaire were determined by the content validity method. Thus, the Persian versions of these questionnaires and self-efficacy questionnaire along with their English versions, were given to 10 professors of the School of Nursing and Midwifery, Mashhad University of Medical Sciences. After making the necessary suggestions and corrections, the Persian versions were translated into English and were given to an English translator. After making sure that the concepts of the English versions were the same as those of the original versions, the final tool was used. The reliability of the self-efficacy questionnaire was reported r = 0.80 by Lorig (2008) via Test-Retest [28], that of the coping style questionnaire was reported by Lazarus (1993) by calculating the alpha Cronbach coefficient for the problem-based coping style to be 0.66 and for the emotive-based coping style to be 0.79 [26], and that of the Persian version in the study of Alpiour et al. (2010) was confirmed with Cronbach's alpha of 0.85 [27]. In this study, Cronbach's alpha was used to determine the reliability of the instruments. Thus, after obtaining the consent of 30 women with gestational diabetes who had the criteria to enter the study, the questionnaires were provided to them, and the reliabilities of the questionnaires of self-efficacy and coping style were confirmed with an alpha coefficient of $\alpha = 0.82$ and $\alpha = 0.97$, respectively.

This study was done in such a way that after introducing yourself and the research team and a brief description of the objectives of the study to women with gestational diabetes and obtaining their written consent, eligible people (based on inclusion and exclusion criteria) completed the questionnaires of demographic, self-efficacy and coping styles. The questionnaires were given to the research units when they were waiting for the pregnancy care or after

their care. It took about 30 minutes to complete the self-report questionnaires, and after completing them, if the researcher saw any unanswered questions, she would complete them by asking the research units. The whole sampling process took five months.

The collected data were analyzed using SPSS Statistical Software version 22 and descriptive statistics (frequency, mean and standard deviation) and Spearman correlation coefficient statistical tests, multiple and general linear regression models. In all tests, it was considered significant a 95% confidence interval and statistical test results with a p of less than 0.05.

RESULTS

Eighteen individuals were excluded from the study (Lack of willingness to continue working together). Resultantly, the final analysis was performed on 400 individuals.

The average age of individuals was 31.34 ± 5.6 years, and the average value of BMI (Body Mass Index) was 27.59 ± 4.8 kg/m^2. Besides, 85 participants (21.2%) had a history of gestational diabetes, and 331ones (82.8%) had wanted pregnancies. One hundred and fifty-nine individuals (39.8%) had high school education, 363 GDM women (90.8%) were homemakers, and 224 ones (56%) were from average socioeconomic status.

The mean and standard deviation of the self-efficacy score, problem-based coping style, and emotive-based coping style was obtained 45.87 ± 13.6, 1.45 ± 0.5, and 1.18 ± 0.4, respectively.

Among women with gestational diabetes, 67 (16.8%) had low, 248 (62.0%) had moderate, and 85 (21.2%) had good self- efficacy.

Spearman test results showed that there was a significant linear relationship between self-efficacy and problem-based coping style (P < 0.0001, r = 0.29); however, there was no significant linear relationship between self-efficacy and emotive-based coping style (P = 0.105, r = 0.08). Most people who had a problem-based coping style had moderate self-efficacy. Also, most people who had an emotive-based coping style had moderate self-efficacy, and Chi-square statistical test showed that the frequency of coping styles had significant statistical differences in terms of self-efficacy levels (Table 1).

Table 1. Frequency Distribution of Women with Gestational Diabetes in Terms of Level of Self-Efficacy According to the Type of Coping Style with Stress

Coping Styles with Stress	Problem-Based Number (Percent)	Emotive-Based Number (Percent)	Total Number (Percent)	Test Result (Chi-Square)
Self-efficacy				
Low	41 (13.2)	26 (29.5)	67 (16.8)	P = 0.001
Moderate	202 (64.7)	46 (52.3)	248 (62.0)	Df = 2
Good	69 (22.1)	16 (18.2)	85 (21.2)	X^2 = 13.2
Total	312 (100.0)	88 (100.0)	400 (100.0)	

Table 2. The Results of Multiple Correlation Test on the Effect of Background Variables on the Relationship Between Problem-Based Coping Style and Self-Efficacy in Women with Gestational Diabetes

Variable	β	P	Exp.β
Type of pregnancy	2.460	0.171	0.068
Socio-economic class	1.082	0.270	0.056
History of gestational diabetes	0.842	0.608	0.025
Age	-0.027	0.825	-0.011
Education	-0.083	0.903	-0.006
BMI	-0.271	0.053	-0.097
Occupation (housewife)	-1.422	0.589	-0.030
Occupation (student)	-1.983	0.695	-0.022

The general linear regression model showed that only subscale of problem-based coping style (R = 0.300, P < 0.0001, F = 39.284, df = 1, β = 2.451) in this model had the significance level of <0.05, and it was considered as predictor variable of self-efficacy. However, subscale of emotive-based coping style had no significant relationship (R = 0.088, P = 0.078, F = 3.125, df = 1, β = 0.825). The linear regression equation of predicting self-efficacy based on the independent variable of the problem-based coping style:

Self-eficacy score = 35.1 + (2.451 × score of problem-based coping style) (Equation 1).

Examining the simultaneous effects of intervening variables on the relationship between problem-based coping style and self-efficacy using multiple regression test showed that among the studied variables except for the occupation variable (employed) that was removed from the regression model, other variables in total had significant multiple correlations with self-efficacy (R = 0.332. P < 0.0001, F = 5.381, df = 9). (Table 2)

DISCUSSION

The results of the present study showed that about 78% of the women with gestational diabetes use a problem-based coping style in dealing with the

challenges and stresses of the disease and its treatment. When people resort to problem-based coping styles in their cognitive assessment of challenging situations, they assess the stressful situation as changeable. If the disease is controllable and not very threatening, it is less likely to cause negative emotions, and using emotive-based styles is not very necessary [12]. In this regard, in a study conducted by Bagherian et al. (2009) on patients with type 2 diabetes using the Jellious questionnaire (60 questions), the results showed that people are more likely to use problem-based coping styles in dealing with stress caused by illness [12]. While in a study conducted in Turkey using Carver's questionnaire (28 questions) on patients with type 1 and type 2 diabetes, the results showed that these patients use the problem-based and emotive-based coping styles equally [17]. Methods of dealing with the stresses of everyday life and adapting to them are influenced by various factors, including age, education, previous experiences, culture, and living environment.

Moreover, the severity and frequency of stresses in people are effective in using and choosing the type of coping styles with stress [29]. Differences in the results of researches in terms of the extent of application and the type of coping styles that diabetic patients use in the face of disease tensions are also affected by these factors, including age [24]. Also, using different tools can be a reason for the differences in the results of these studies.

The results of the present study showed that 62% of women with gestational diabetes had moderate self-efficacy. In this regard, in a study by Kalhor et al. (2015) aimed to determine the relationship between self-efficacy of women with gestational diabetes and maternal and neonatal outcomes on 100 women with gestational and first childbirth, the results showed 58 women (58%) had high self-efficacy [30]. In the study by Bastani *et al.* (2010) on 100 GDM women, the results showed that only 57% of women with gestational diabetes had high self-efficacy [23]. Given that to interventions related to self-care behaviors, self-efficacy is considered a significant social psychological variable, a low percentage of self-efficacy is a considerable amount [23]. Low self-efficacy in women with gestational diabetes can lead to a lack of adherence to recommended diets to control their blood sugar and, consequently, an increased risk of adverse pregnancy and childbirth consequences [31].

In the present study, there was a significant direct linear relationship between problem-based coping style and self-efficacy in women with gestational diabetes, and it was considered a predictor variable of self-efficacy. The results of the present study can be justified as follows: a person who uses a problem-based coping style usually assumes the responsibility of solving the problem, looks for accurate information about the problem, seeks help from others, makes realistic decisions, and has high self-efficacy [32]. Whereas according to a study conducted by Rabani Bavojdan et al. (2012) to determine the relationship between general self-efficacy beliefs and coping styles with stress over 354 drug abusive men in Kerman, using the general self-efficacy scale (GSES_10) of Schwartz and Jerusalem (1979) and the Billings and Mouse's coping responses inventory (CSI) (1981), the results showed that general self-efficacy had a significant positive correlation with problem-based coping style and a significant negative correlation with emotive-based coping style [33]. Moreover, the results of the study carried out by Hosseini Dowlatabadi et al. (2014) aimed at investigating the relationship between self-efficacy with coping styles on 200 undergraduate students of Guilan University, using the questionnaire to deal with stressful situations of Endler and Parker. The general self-efficacy questionnaire showed that self-efficacy had a positive and significant correlation with the problem- based coping style and a significant inverse relationship with emotive-based coping style [34].

On the other hand, in the study conducted by Ghodrati Mirkohi et al. (2016) to determine the role of coping styles with tension and hardiness in predicting the self-efficacy of type 2 diabetes management on 57 patients with mild diabetes and 59 patients with severe diabetes (based on glycosylated hemoglobin) who referred to Bu Ali and Welayat Hospitals in Qazvin City and using the Endler and Parker questionnaire of methods to deal with tension and self-efficacy scale in diabetes management, the results showed that the regression coefficients were -0.36 and significant in the predictor variable of emotive-based coping style. That is, if one unit of emotive-based coping style increases, 36% of self-efficacy is reduced. The regression coefficients were not significant in predictor variables of problem-based and avoidant [7]. The reason for the difference between the present study and the previous studies is the difference in the type of tools for measuring coping styles and self-efficacy in the mentioned studies and cultural, psychological and social differences that can affect the results of various studies. On the other hand, the population studied in the present study is also different from those studied in the mentioned studies.

One of the strengths of this study was the high sample size. The limitations of this study were non-random sampling and a large number of questions

that had not been answered correctly, and the researcher completed by asking the research units. Due to the limitations and results of this study, it is recommended that future studies focus on the effects of training coping styles on controlling stresses and promoting self-efficacy in women with gestational diabetes and the broader statistical community by controlling different socio-cultural variables.

CONCLUSIONS

According to the results of this study, the problem-based coping style predicts the self-efficacy of women with gestational diabetes. Therefore, doctors, health-care providers, and midwives should incorporate ways to adapt to gestational diabetes in self-care training programs for GDM women and improve their self-efficacy and self-care behaviors.

Acknowledgement

The present study is a part of the Master thesis in Midwifery approved in 2015 by the Mashhad University of Medical with the Research Code 931760. Now, the author would like to thank and acknowledge the research deputy of Mashhad University of Medical Sciences for financially supporting this project. Moreover, the author wants to sincerely express gratitude for the contributions of officials and personnel of the health centers and clinics and the subjects of the study.

Authors' Contributions

Conceptualization: KM, BHM. Data curation: BHM. Formal analysis: BHM. Funding acquisition: Mashhad University of Medical Sciences. Methodology: KM, BHM. Project administration: KM. Writing-original draft: BHM. Writing-review and editing: BHM.

Funding/Supports

This study was supported by the Mashhad University of Medical Sciences (grant no., IR.MUMS.REC.1394.137).

Ethical Consideration

The ethics committee has approved this proposal, and written consent has been obtained from all research units. Also, the authors affirm their observance of ethical rules when processing the results of the studies.

Conflict of Interest

There are no conflicts of interest.

REFERENCES

1. Cunningham F, Leveno KJ, Bloom S, Hauth J, Rouse D, Spong C. Volume three of Williams Obstetrics. 24nd ed. New York: Mc Graw Hill; 2018. 322-3 p.
2. Sayehmiri F, Bakhtyari S, Darvishi P, Sayehmiri K. Prevalence of gestational diabetes mellitus in Iran: a systematic review and meta-analysis study. [In Persian]. IJOGI. 2013;15:16-23. **doi:** 10.5812/ircmj.12581 **pmid:** 25068041
3. Klidal M, Willebrand M, Andersson G, Gerdin B, Ekselius L. Coping Strategies, injury characteristic and long-.term outcome after burn injury. Int J Care Burn Injur. 2005;6(5):511-8. **doi:** 10.1016/j.injury.2004.06.013 **pmid:** 15755433
4. Norouzi A, Sheibani B. Relationship between personality trait and self- management in diabetic patients referred to Bushehr medical centers in 2012-13. [Persian]. ISMJ. 2014;16(6):436-46.
5. Mehrpouya N. "The effect of the empowerment program on self-care and coping strategies of patients with type 1 diabetes referred to diabetes clinic in Mashhad Corp 1391"[dissertion]. Iran University; 2013.
6. Banaei Heravan M. "Prediction of self- care behaviors among women with gestational diabetes based on coping styles and maternal and fetal health locus of control"[dissertion]. [Persian]. Iran University; 2015.
7. Ghodrati Mirkohi M, Boogar R. Predicting diabetes management self-efficacy base on hardiness and coping strategies in patients with type 2 diabetes mellitus. [Persian]. JQUMS. 2016;20(4):43-51.
8. Bakhteh A, Kolivand M, Asadi N, Rezaei M, Jaberghaderi N. Effect of Cognitive Behavioral Therapy on Self-efficacy in Women with Gestational Diabetes: A Randomized Clinical Trial. [Persian]. J Mazandaran Univ Sci. 2018;28(165):78-86.
9. Sharifirad GR, Azad Bakht L, Feizi A, Mohebi S, Kargar M, Rezaie AR. The role of self-efficacy in self-care among diabetic patients. [Persian]. J Health Sys. 2012;7(6):648-59.
10. Anderson RM, Funnell MM, Fitzgerald JT, Marrero DG. The diabetes empowerment scale: A measure of psychosocial self-efficacy. Diabeet Care. 2000;23(6):739-43. **doi:** 10.2337/diacare.23.6.739 **pmid:** 10840988
11. Fisher C, Hauck Y, Fenwick J. How social context impacts on women's fears of childbirth: a western Australian example. Soc Sci Med. 2006;63(1):64-75. **doi:** 10.1016/j.socscimed.2005.11.065 **pmid:** 16476516
12. Bagherian Sararoudi R, Mahmoodi MGA. Coping styles among diabetic patients. Arak Univ Med Sci J. 2009;12(1):9-17. [Persian].
13. Dadsetan P. Morbid change psychological . First volume. 4nd ed. [In Persian]. Tehran: Semat; 2001.
14. Lazarus R, Folkman S. Stress, appraisal and coping. New York: Spinger Publishing Company; 1984. 22-52, 117-39 p.
15. Rasoulzadeh M. "The effects of collaborative infertility counseling on perceived stress and coping strategies in infertile women undergoing IVF"[dissertion] . [In Persian]. Iran University; 2010.
16. Chouhan V, Shalini V. Coping strategies for stress and adjustment among diabetics. J India Academ Appl Psychol. 2006;32(2):106-11.
17. Tuncay T, Musabak I, Gok DE, Kutlu M. The relationship between anxiety, coping strategies and characteristics of patients with diabetes. Health Qual Life Outcome. 2008;6(79):1-9. **doi:** 10.1186/1477-7525-6-79 **pmid:** 18851745
18. Habboushe DF. Coping style and locus of control: predicting daily adherence to self-monitoring of blood glucose in women with gestational diabetes mellitus. Dr Thesis, School of Health Professions.: MCP Hahnemann University of America; 2000.
19. MacNeil L, Esposito-Smythers C, Mehlenbeck R, Weismoore J. The effects of avoidance coping and coping selfefficacy on eating disorder attitudes and behaviors: A stress-diathesis model. Eating Behaviors 2012;13(4):293-6. **doi:** 10.1016/j.eatbeh.2012.06.005 **pmid:** 23121777

20. Morin P, Demers D, Turcotte S, Mongeau L. Association between perceived self-efficacy related to meal management and food coping strategies among working parents with preschool children. Appetite. 2013;65:43-50. **doi:** 10.1016/j.appet.2013.01.012 **pmid:** 23402715
21. Parto M, Besharat MA. The direct and indirect effects of self-efficacy and problem solving on mental health in adolescents: Assessing the role of coping strategies as mediating mechanism. Procedia-Soc Behav Sci 2011;30:639-43. **doi:** 10.1016/j.sbspro.2011.10.124
22. Cheraghaligol H, Bagheri N, Rahimi ZG. Achievement motivation, coping styles, and self-efficacy in students. [Persian]. Contempor Psychol. 2017;12(1):521-5.
23. Bastani F, Zarrabi R. Self-efficacy in women with gestational diabetes. [In Persian]. J Tehran Med Univ [HAYAT]. 2010;16(3):56-65.
24. Hamadzadeh S, Ezatti Z, Abedsaeidi Z, Nasiri N. Coping styles and self-care behaviors among diabetic patients. [Persian]. IJNR. 2013;25(80):24-33.
25. Stanford Patient Education Research Center. Self-management@stanford.edu. 2008 [March 4]. Available from: http://patienteducation.stanford.edu/.
26. Lazarus SR. Coping theory and research: past, present, future. Psychosomatic Med. 1993;55(3):234-47. **doi:** 10.1097/00006842-199305000-00002 **pmid:** 8346332
27. Alipour A, Hashemi T, Babapour J, Toosi F. The relationship between coping strategies and students' happiness. [Persian]. J Psychol Univ Tabriz. 2010;5(18):20-9.
28. Lorig K, Ritter P, Villa F, Piette J. Spanish diabetes self-management with and without automated telephone reinforcement: two randomized trials. Diabetes Care J. 2008;31(3):408-14. **doi:** 10.2337/dc07-1313 **pmid:** 18096810
29. Ouyang C. "Factors affecting diabetes self-care among patient with type 2 diabetes in taiwan's" [dissertion]. Tusfs University; 2007.
30. Kalhor M, Samiirad F, Barikani A, Safarpoor D, Shirali MH. Relationship between self-efficacy with adverse delivery and neonatal outcomes inpregnant women with gestational diabetes admitted to kowsar hospital of Gazvin in 2013. [Persian]. J Clin Care. 2015;2(1):28-38.
31. Crowther C, Hiller F, Moss J, McPhee A, Jeffries W, Robinson F. For the Australian carbohydrate intolerance study in pregnant women(ACHOIS) trial group effect of treatment of gestational diabetes mellitus on pregnancy outcomes. N Engl J Med. 2005;352(24):2477-86. **doi:** 10.1056/NEJMoa042973 **pmid:** 15951574
32. Bahadori Khosroshahi J, Khanjani Z. Relationship of coping strategies and self-efficacy with substance abuse tendency among students. [Persian]. Knowledge Res Appl Psychol. 2013;14(3):80-90.
33. Rabani Bavojdan M, Rabani Bavojdan M, Nikazin A, Kaviani N, Khezrimoghadam A. The relationship between self-efficacy beliefs and metacognition with coping strategies in substance abusers. [Persian]. J Appl Psychol. 2012;6(3):85-102.
34. Hosseini Dowlatabadi F, Sadeghi A, Saadat S, Khodayari H. Relationship between self- efficacy and self- actualization with coping strategies among students. [Persian]. Res Med Educat. 2014;6(1):10-7. **doi:** 10.18869/acadpub.rme.6.1.10