The Relationship between Acceptance of Illness and Quality of Life in Mothers with Gestational Diabetes Mellitus

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Introduction: Study on quality of life and acceptance of the illness plays a significant role in the health of pregnant women, especially pregnant women with gestational diabetes mellitus. The aim of this study was to determine the relationship between the acceptance of illness and quality of life in mothers with gestational diabetes mellitus.
Methods: This descriptive-analytical study was performed on 150 mothers with gestational diabetes mellitus referred to Al-Zahra Hospital of Rasht, Iran, using available sampling method. Data were collected by a demographic information checklist and 36-Item Short Form Health Survey questionnaire (SF-36) in two dimensions, physical and mental health. Data were analyzed by SPSS 20 software and using chi-squared, Fisher's exact, and Mantel-Haenszel tests.
Results: Among the mothers, 37.3% accepted the illness and 62.7% did not. There was a

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significant relationship between the quality of life status or score and the gestational age (p = 0.019), surgical history (p = 0.005), number of operations (p = 0.002) and previous history of diabetes in previous pregnancies (p = 0.037). However, with the control of individual and social variables, Mantel-Haenszel test did not show significant relationship between acceptance of illness and the quality of life of the mothers. On the other hand, the relationship between acceptance of illness and quality of life was not significant, based on χ2 test.

Conclusion: It is suggested that training classes be held before and during pregnancy for mothers at the reproductive age so that they have the readiness and knowledge to deal with the disease properly.

1. INTRODUCTION

Pregnancy is an important stage in women's life. In this period, mother's health plays a vital role in the outcomes of childbirth. The underlying problems, illness and disorders in the pregnancy can compromise the health of the mother and the fetus. One of the most common medical diseases in pregnancy is gestational diabetes mellitus [1].

Diabetes is one of the most common metabolic complications during pregnancy. By 2030, the number of people with diabetes is expected to double to the current level, which is a diabetes epidemic of pregnant women [1]. Gestational diabetes is high glucose in blood that develops in pregnancy period and maybe disappears after delivery. it, can lead to adverse outcomes of pregnancy and decrease in quality of life. Its prevalence is 3% in women at reproductive age, and 2% to 6% for pregnant women [2,3]. The prevalence of gestational diabetes mellitus in the world varies from 1 to 14 percent, depending on demographic factors and diagnostic criteria. Different races and ethnicities can lead to differences in the prevalence of gestational diabetes [4,5]. The prevalence of gestational diabetes mellitus in Iran is 4.9%, with the lowest prevalence (0.7%) in Kermanshah, and the highest prevalence (18.6%) in Karaj [4].

Gestational diabetes mellitus, as an invisible illness, can lead to adverse outcomes of pregnancy and decrease in quality of life by changing the routine prenatal care. Quality of life is a multi-dimensional concept, which World Health Organization (WHO) defines it as: "The individual's perception of their position in life, which is formed based on the culture and value systems, and related to the goals, expectations, interests, standards and life experiences" [2]. Also, quality of life involves different dimensions of physical, psychological and social health and comfort of an individual. Measuring quality of life in planning for maternal and neonatal care is important for policymakers and health care associations [6].

Acceptance of illness is one of the factors that can be effective in the success of treatment. The acceptance is a very important stage in the relationship between the patient and the illness in which the patient adapts herself to the new conditions of the disease. Acceptance of the illness gives the patient a sense of security, and enables him to participate actively with the therapies provided by physicians. It also gives the patient an optimistic attitude and a life expectancy [7]. It seems that there is close relationship between acceptance of illness and quality of life. The studies carried out by Lewko et al. [8] shows that quality of life is positively correlated with the acceptance of the illness in patients with gestational diabetes mellitus. Acceptance of the illness can help reduce the limitations resulting from diabetes, motivate patients to achieve treatment goals and overcome disease problems. Despite the fact that quality of life and acceptance of the illness play a significant role in the health of pregnant women, especially pregnant women with diabetes, few studies have been carried out in Iran in this case. Since the people's perception of the quality of life is various in different geographical regions and cultures, studies on the acceptance of the illness and the quality of life of pregnant mothers should be conducted in different parts of the world. The aim of this study was to determine the relationship between the acceptance of the illness and quality of life in mothers with gestational diabetes mellitus referred to Alzahra Hospital in Rasht.

2. METHODS

2.1 Subjects

The present study was a descriptive-analytical study, the statistical population of which consisted of those referring to Al-Zahra Hospital in Rasht. The study population consisted of all

pregnant women with gestational diabetes mellitus referred to al-Zahra Hospital in Rasht, and were studied based on census method. The sample size was estimated according to previous studies [9]. Therefore, the required sample size was determined as 150 pregnant women with gestational diabetes mellitus.

2.2 Inclusion Criteria

Having gestational diabetes, having a companion and ability to answer questionnaire's questions, informed consent and completing written consent.

2.3 Exclusion Criteria

Presence of any chronic and metabolic disease, autoimmune disorders, allergies, neurological diseases, and the incidence of preeclampsia.

2.4 Ethical Considerations

The study has been reviewed and approved by the Ethics Committee of Guilan University of Medical Sciences (Code of Ethics IR.GUMS.REC.1396.296). All individuals were entered into the study with personal consent and no further action was performed by the researchers.

2.5 Data Gathering Tool

Data were collected by two standard questionnaires and a checklist for demographic information. Checklist consisted of demographic information including: age, marital status, occupation, educational level, income, place of residence, residency status, spouse's education level, number of pregnancies, abortion history, history of any illness and surgery, history of diabetes in previous pregnancies and incidence of diabetes complications in pregnancy.

Then, 36-Item Short Form Health Survey questionnaire (SF-36) was used. The questions of this questionnaire are the most common and comprehensive standard tools available in this field, which is used as a standard measure of health outcomes internationally. This questionnaire contains 36 questions, with two dimensions of physical and mental health, and were measured in eight domains (physical function, physical limitation, emotional limitation, energy and vitality, fatigue, emotional health, social performance, general pain and health). The responses given were scored based on the questionnaire's instructions. The questionnaire questions involve both positive and negative

aspects of health. Also, various scoring scales were used, such as the Likert scale, from the mild to the excellent for positive aspects and the weak to the high for negative aspects, and yes/ no responses to answer different questions of this tool. The scoring method of the 36-item form is separately performed for each subscale (and domains) so that the score of 59 in terms of physical health and the score of 83 in terms of mental health, and the total score of 142 were assigned. Also, in each dimension, the scores below average were considered as undesirable condition and the scores above average were considered as favorable condition. Therefore, in the aspect of physical health, gaining scores below and above 38 by the individuals indicates an undesirable and desirable quality of life, respectively. In the mental health aspect, earning scores below and above 47 indicates a poor and desirable quality of life, respectively. In the whole, total score below and above 85 by the individuals indicates undesirable and desirable quality of life, respectively. The scales of Persian version of the questionnaire (SF-36) have a minimum reliability standard coefficient in the range of 77% to 90%. In general, the Persian version of the tool (SF-36) has validity and reliability to measure the quality of life associated with the health [10].

Finally, the questionnaire of acceptance illness scale (AIS) was used. This scale consists of 8 questions that describe the outcome of poor health status. The questions are related to the constraints resulting from the disease, loss of independence, performance, the feel of reliance on others, and decreasing self-confidence. Each question includes a five-point Likert scale of responses, from completely agreement (equal to 1) to completely disagreement (equal to 5). The completely agreement indicates poor compliance with the disease and lack of acceptance of the illness. The acceptance of illness score is a set of all scores and can range from 8-40. Low scores (0-29) indicate lack of acceptance of and compliance with illness and a strong feeling in lack of mental health. High scores (30-40) justify the acceptance of the illness and indicate lack of negative emotions associated with the disease. This scale can be used to evaluate the degree of illness acceptance for each disease. In Poland, Juczynski determined the reliability and validity by calculating Cronbach's alpha as 0.82 [15]. In order to determine the validity, the validity of the acceptance of illness scale questionnaire was assessed by validation measuring method using a panel of ten Faculty members of Nursing and

Midwifery School, Shahid Beheshti Rasht. Given that CVR score (content validity ratio) and CVI score (content validity index) for each question should be more than 0.62 and 0.79, respectively, CVR = 0.95 and CVI = 0.92 have been for this scale. To determine the reliability of the questionnaire, the questionnaire was completed by 20 patients with gestational diabetes referred to Alzahra Education, Research and Remedial Center of Rasht, and Cronbach's alpha coefficient was calculated as 0.84 to determine internal consistency, which had a high reliability.

2.6 Statistical Analysis

Data were entered into SPSS version 20. Chi-squared, Fisher's exact, and Mantel-Haenszel tests were used to determine the relationship and compare mean and standard deviation. The significance level in this study was considered P <0.05.

3. RESULTS

The mean age of the individuals was 31.21 ± 5.97 years old. In terms of education, 45.3% had under high school diploma, 34.7% had high school diploma, and 20% had university education. In terms of employment status, 92.7% of the individuals were housewives. In terms of their husband's occupation, 48.3% were self-employment and 42.7% were workers. In terms of their monthly income, a high percentage (46%) of them reported their monthly income as 10 -15 million IRR. In terms of residency, 72.7% of the population lived in the city. In terms of housing situation, a high percentage of the individuals (54.7%) had rental houses.

The gestational age of most mothers was 28 weeks and older (88%). Other variables related to pregnancy in the individuals are presented in Table 1.

Table 1. Distribution of research units (mothers) in terms of variables related to pregnancy

Variables related to pregnancy		Number (%)
Number of pregnancies	1	48 (32.5)
	2	55 (35.2)
	3 and more	47 (32.3)
	Total	150 (100)
Gestational age (week)	0-14	5 (2.7)
	14-28	12 (9.3)
	28 and more	133 (88)
	Total	150 (100)
A history of Obstetric complications during the previous pregnancy	No complication in previous pregnancy	81 (51)
	Abortion	37 (23.7)
	Diabetes mellitus	19 (12.7)
	Preterm childbirth	13 (9.6)
	Total	150 (100)
Outcome of previous pregnancy	No childbirth (first pregnancy)	62 (41.3)
	Natural	25 (16.7)
	Caesarean	63 (42)
	Total	150 (100)
Planning the current pregnancy	Yes	102 (68)
	No	48 (3)
	Total	150 (100)
Family history of diabetes	Yes	83 (55.3)
	No	67 (44.7)
	Total	150 (100)
Surgical history	Yes	57 (38)
	No	93 (62)
	Total	150 (100)
Number of surgeries	No surgery	110 (73.3)
	One time surgery and more	40 (26.7)
	Total	150 (100)
History of diabetes in previous pregnancy	Yes	33 (22)
	No	117 (78)
	Total	150 (100)

The majority (62.7%) of the individuals had no acceptance of the illness, and only 37.3% of them had acceptance of illness. Also, the mean and standard deviation of the acceptance of illness score were 27.63 ± 8.65 (Table 2).

The majority of the individuals (63.3%) had a good quality of life. Also, in the aspect of physical health, the majority of subjects (88.8%) had a favorable situation. However, in the mental health dimension, the majority of the studied units (88.6%) had an unfavorable status in their quality of life. Also, before the grouping of the above variables, the mean and standard deviation of the total quality of life score were 87.7 ± 8.30 which was below range of the desired condition, and the mean and standard deviation of the quality of life score in the physical and mental dimensions were 47.06 ± 6.78 and 40.64 ± 4.88, respectively (Table 3).

There is a significant relationship between quality of life in the individuals with variable of gestational age (p = 0.019), so that the gestational age of 28 weeks and above with 66.7% frequency had desirable quality of life.

Also, there was a significant relationship between the individuals with surgical history (p = 0.005) and number of surgery (p = 0.002), so that the individuals with surgical history (50.9%) did not have a good quality of life, and those who did not have surgical history (72%) had a good quality of life. On the other hand, those with more than one surgery (58.3%) did not have good quality of life,

and there was significant relationship in individuals with history of diabetes in pervious pregnancies (p = 0.037) so that the individuals with history of diabetes in previous pregnancies (78.8%) had good quality of life (Table 4).

Using chi-square test (quality of life and acceptance of illness) regardless of age, gestational age, history of diabetes in previous pregnancies, history of previous surgery, and Mantel-Haenszel tests with the elimination of age, gestational age, history of diabetes in previous pregnancies, previous history of surgery, no significant relationship was observed between acceptance of illness and quality of life, based on age, week of pregnancy, history of diabetes in previous pregnancies and previous history of surgery (Table 5).

The relationship between acceptance of illness and quality of life in the individuals was not significant. Although the percentage of acceptance of illness in the individuals with good quality of life was higher (69.6%) than those with poor quality of life (30.4%), but there was no significant relationship between acceptance of disease and quality of life, based on χ2 test. (Table 6).

4. DISCUSSION

The aim of this study was to determine the relationship between the acceptance of illness and quality of life in mothers with gestational diabetes mellitus. The results of this study

Table 2. Distribution of the individuals in terms of acceptance of illness

Variable (Acceptance of illness)	Number (%)
No acceptance of illness (acceptance of illness score 0-29)	94 (62.7)
Acceptance of illness (acceptance of illness score 30-40)	56 (37.3)
Total	150 (100)

Table 3. The distribution of the individuals according to the quality of life variable and its physical and psychological dimensions and the mean score of the above variables before grouping

Variables related to the quality of life		Number (%)	Mean± SD
Quality of life	Undesirable (85-29)	55 (36.7)	87.7±8.3
	Desirable (142- 86)	95 (63.3)	
	Total	150 (100)	
Quality of life in physical dimension	Undesirable (38- 17)	15 (10.2)	47.6±6.78
	Desirable (59-39)	132 (88.8)	
	Total	150 (100)	
Quality of life in mental dimension	Undesirable (47-12)	133 (88.6)	40.64±4.88
	Desirable (83-48)	17 (11.2)	
	Total	150 (100)	

Table 4. Frequency distribution of quality of life in the individuals based on pregnancy variables

Variables of pregnancy		Quality of life				Statistical outcome
		Desirable (142-86)		Undesirable (142-86)		
		Number	Percent	Number	Percent	
Number of current pregnancies	1	36	72	14	28	P=0.291
	2	30	60	20	40	
	3 and more	29	58	21	42	
Gestational age (week)	0-14	3	66.7	1	33.3	P=0.019*
	14-28	3	28.6	10	71.4	
	28 and more	88	66.7	44	33.3	
A history of midwifery complications during the previous pregnancy	No complication in previous pregnancy	56	69.1	25	3.9	P=0.103
	Abortion	18	48.6	19	51.4	
	Diabetes mellitus	10	52.6	9	47.4	
	Preterm childbirth	9	70	4	30	
Outcome of previous pregnancy	Total	38	61.3	24	38.7	P=0.132
	No childbirth (first pregnancy)	17	68	8	32	0.347= χ2
	Natural	40	63.5	23	36.5	
Planning the current pregnancy	Yes	69	67.6	33	32.4	P=0.211
	No	26	54.2	22	45.8	2.554= χ2
Family history of diabetes	Yes	55	66.3	28	33.7	P=0.407
	No	40	59.7	27	40.3	0.255= χ2
Surgical history	Yes	28	49.1	29	50.9	0.005*
	No	67	72	26	28	2.174= χ2
Number of surgeries	No surgery	78	71.6	31	28.4	P=0.002*
	One time surgery and more	17	41.7	24	58.3	1.651= χ2
History of diabetes in Previous pregnancy	Yes	26	78.8	7	21.2	P=0.037*
	No	69	59	41	41	0.052= χ2

Table 5. Determining the relationship between acceptance of illness and the quality of life of individuals by controlling individual and social variables (based on age, week of pregnancy, history of diabetes in previous pregnancies and history of previous surgery)

Quality of life Acceptance of illness		Desirable condition	Undesirable condition	Statistical difference between two groups:95 CI(% OR)	Significant level*
Based on age	Has acceptance (number=56)	39 (69.6%)	17 (30.4%)	1.557 (0.771-3.144)*	*P=0.216 P=0.168**
	No acceptance (number=94)	56 (59.6%)	38 (40.4%)	2.292 (0.696-7.550)**	
Based on the week of pregnancy	Has acceptance (number=56)	39 (69.6%)	17 (30.4%)	1.338 (0.629-2.846)*	P=0.216* **P=0.06
	No acceptance (number=94)	56 (59.6%)	38 (40.4%)	12 (0.773-186.362)**	
Based on history of diabetes in Previous pregnancy	Has acceptance (number=56)	39 (69.6%)	17 (30.4%)	1.333 (0.1133-15.704)*	*P=0.216 **P=0.181
	No acceptance (number=94)	56 (59.6%)	38 (40.4%)	1.664 (0.786-3.522)**	
Based on surgical history	Has acceptance (number=56)	39 (69.6%)	17 (30.4%)	2.275 (0.756-6.849)*	P=0.216* P=0.708**
	No acceptance (number=94)	56 (59.6%)	38 (40.4%)	1.198 (0.465-3.084)**	

Table 6. The relationship between acceptance of illness and quality of life in the individuals

Quality of life Acceptance of illness	Desirable condition	Undesirable condition	Significant level*
Has acceptance (number=56)	39 (69.6%)	17 (30.4%)	P=0.216
No acceptance (number=94)	56 (59.6%)	38 (40.4%)	χ2=1.53
Total	95 (63.3%)	55 (36.7%)	150

indicated that most of the individuals did not accept the illness (62.7%). The acceptance of illness score in the study was 27.63 ± 8.65. In this regard, Ben et al [2] in Poland, reported the acceptance of the illness score in women with gestational diabetes as 30.66 ± 7.08. The results of the study are somewhat consistent with the results of the present study. In another study, Lewko et al. [7] reported the acceptance of illness score in patients with diabetic peripheral neuropathy as 29.6 [8], which is close to the results of this study. However, Niedzielski et al. [11] reported the disease acceptance score in patients with chronic diseases as 23.33, which was lower than the amount mentioned in our study. In justifying this difference, various factors affecting the acceptance of the illness can play role, such as the level of education of patients, the rate of complications of pregnancy and diabetes, the level of wife and relative support, even the economic situation and social welfare of the patient. The type of disease and the difference in the type of sample, are also other factors contributing in the difference of outcomes.

The questionnaire consisted of three aspects. The first aspect was related to quality of life, and the average quality of life score in this study was 87.7 ± 8.30, and 63.3% of the subjects had a good quality of life. Also, in physical health dimension, the score was 47.06 ± 6.78. However, in the mental health aspect, the majority of subjects (95.3%) had an undesirable situation and the calculated score was 40.64 ± 4.88. In this regard, Ben et al. [2] reported the quality of life score in physical dimension as 16.63%, which is above the findings of this study. In another study carried out by Mohaddesi et al. [12], the quality of life score in the physical dimension and in the high risk mothers was 60.28 and in the mothers with normal pregnancy was 59.92, which contradicted this study. In justification, the majority of investigated individuals are in the third trimester of pregnancy, and consequently have a better physical condition, because the common problems of pregnancy such as nausea, vomiting, and the threat of further abortion are related to the first trimester of pregnancy, which affects quality of life. To determine the role of underlying variables

such as gestational age, surgical history, and history of gestational diabetes, quality of life of individuals was assessed, according to each of these variables and their subgroups. The individuals with a 28-week-old pregnancy and over (66.7%), those who did not have a surgical history (72%) and those with a history of diabetes in previous pregnancies (78.8%) had a good quality of life. Also, patients with more than one surgical history (58.3%) had poor quality of life, according to the variables of pregnancy. In this regard, Lee et al. [13] showed that women with natural childbirth had a better general health than women with cesarean section, according to the variables of pregnancy. Also, the study results of Williams et al. [14] showed that some dimensions of quality of life in the postpartum period in women with the natural childbirth are better than those with cesarean section. In the study of Mousavi et al. [15] no significant difference was observed between the different domains of quality of life in terms of pregnancy variables in the women with normal childbirth and cesarean. Fabris et al. [16] compared the quality of life of women with repeated cesarean section and normal childbirth, and showed a high quality of life for women with cesarean section compared to normal childbirth. In justifying the studies that were similar to the present study with more quality of life in the group with normal childbirth than that with cesarean section, it can be said that the history of cesarean section can decrease quality of life of mothers, due to the reduced ability to perform daily activities and having a longer hospitalization, high cost, the use of probable drugs and its possible complications, and lactation problems after cesarean section can be effective factors in reducing the quality of life of mothers, while normal childbirth with lower financial cost and early maternal recovery and faster mother's ability to do marital and family affairs improve the quality of life.

Also, the relationship between acceptance of illness and quality of life, in terms of individual and social variables (age, week of pregnancy, history of diabetes in previous pregnancies, and history of previous surgery) was examined. It was found that there is no significant difference between acceptance of illness and quality of life

in terms of individual and social variables mentioned. Although the percentage of acceptance of illness in people with good quality of life (69.6%) was higher than those with poor quality of life (30.4%), it was not statistically significant. Meanwhile, in the study of Bet et al. in Poland with the aim of determining factors affecting quality of life and accepting the disease of women with gestational diabetes, there was a significant correlation between the acceptance of the illness and all areas of quality of life [2]. Also, the study carried out by Lewko et al. [8] showed that quality of life has a positive correlation with the acceptance of the illness. A higher quality of life score has been associated with a higher incidence of diabetes. On the other hand, Lewko 's study showed that anxiety and depression in diabetic patients have a negative effect on the acceptance of the disease, and the acceptance of the disease affects the quality of life in the public health [9]. The results of these studies are not consistent with the results of the present study. The reason for this difference can be related to the difference in the research environment, number of samples, research design, the role and impact of social, economic, and psychological support of family and community in the process of disease and pregnancy, regardless of the fact that in lewko's study, the research society did not involve pregnant women. Academic education of individuals, community culture, and attitude of each society towards disease are also other factors affecting observation.

5. CONCLUSION

The present study showed that the majority of subjects had good quality of life, however, there was no relation between the acceptance of illness and quality of life, and the majority of people did not accept the disease. Perhaps due to the low number of people in the case group, no significant improvement in their quality of life was observed. Since gestational diabetes mellitus as an invisible disease affects mother and fetus and leads to adverse outcomes in pregnancy, training classes are recommended for pregnant mothers before and during pregnancy so that a person has readiness and necessary knowledge to have a good understanding of the disease.

CONSENT

Informed and complete written consent was received from the participants.

ETHICAL CONSIDERATIONS

The study has been reviewed and approved by the Ethics Committee of Guilan University of Medical Sciences (Code of Ethics IR.GUMS.REC.1396.296). All individuals were entered into the study with personal consent and no further action was performed by the researchers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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