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Exploring the Perceptions and Experiences of Women with Gestational Diabetes Regarding Their Sexual Function: A Qualitative Study

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ABSTRACT

Background & aim: Gestational diabetes is is associated with some degree of sexual dysfunction in women. Therefore, this study aimed to explore the perceptions and experiences of women with gestational diabetes regarding their sexual function.

Methods: This study was a qualitative research using the conventional content analysis approach and was conducted from April to December 2020 in Mazandaran Province, Iran. The participants included 15 women with gestational diabetes, six key individuals, and two husbands of women with gestational diabetes who were selected using a purposive sampling. The data were collected through in-depth semi-structured interviews. The content analysis approach was used based on the Graneheim and Lundman (2004) method. Guba and Lincoln's criteria including credibility, transferability, confirmability, and dependability were applied to achieve trustworthiness. MAXQDA10 software was used for data management.

Results: Data analysis illustrated four themes: "sexual problems in women with gestational diabetes", "worries and problems caused by gestational diabetes", "non-comprehensive services", and " need to empower the individuals and significant others ".

Conclusion: Worries and problems caused by gestational diabetes that develop in women who receive inappropriate and non-comprehensive services can affect their sexual function. Therefore the supportive role of health care providers and significant others are necessary to empower the patients to overcome their sexual problems.

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Introduction

Gestational diabetes, which is defined as impaired glucose tolerance during pregnancy (1), is one of the factors of sexual dysfunction in women that is caused by a sudden change from a normal pregnancy to a high-risk pregnancy (2). The Center for Disease Control (CDC) estimates approximately 10% incidence of gestational diabetes in the United States. The International Diabetes Association has also reported that in some countries, the rate of gestational diabetes is 17.8-41.9% (3). The prevalence of gestational diabetes in Iran is estimated to be 4.9% (4).

Gestational diabetes is associated with both maternal and fetal risks, including precise control of blood sugar, changes in fetal health

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and growth, timely decision-making and type of delivery, and increased short-term and long-term complications for both mother and infant. In order to reduce these risks, women with gestational diabetes should change their habits and receive careful medical care. Adequate and controlled diet is essential to ensure weight gain control, adopt an active life-style, perform continuous monitoring of glucose level and occasional insulin injections (2). These processes and the responsibility to control metabolic factors through precise control of glucose level make these women anxious and uncertain about current or future problems (5). In fact, in addition to the stress of pregnancy, gestational diabetes developing during pregnancy is also a stressor because it can cause serious problems for the health of both mother and fetus (6). Therefore, it seems that the management of gestational diabetes using diagnostic methods, treatment, medications and long-term counseling affects the mental state of pregnant women, and the diagnosis of gestational diabetes can lead to significant changes in daily life style influencing the sexual function of women (7).

However, most studies on sexual function of women with gestational diabetes have been conducted using a quantitative approach and presented conflicting results. Some studies have shown no difference in sexual function scores in current gestational diabetes compared to healthy pregnant women or in women with previous gestational diabetes (8-9). While other investigations have shown that women with gestational diabetes had a higher risk of sexual dysfunction and lower scores of sexual function than pregnant women (7, 10). In addition, no qualitative in-depth study has been reported regarding sexual function and related factors in pregnant women with gestational diabetes, while several qualitative studies have been conducted on pregnant women as well as women with diabetes.

However, gestational diabetes affects women's sexual function through both biological mechanisms and psychological and social factors. In addition, enforced lifestyle involving continuous glucose level control, insulin injection, and insulin dose adjustment can affect the quality of life of mothers with gestational diabetes. These special living conditions can affect the sexual life and performance of these women. Therefore, it is necessary for women with gestational diabetes to understand and experience sexual function and its related factors in order to provide strategies to improve their sexual function. Therefore, the objective of the present study was to explain the perceptions and experiences of women with gestational diabetes regarding their sexual function.

Materials and Methods

This qualitative study is part of a sequential explanatory mixed-methods study that was conducted using a conventional content analysis approach to study women with gestational diabetes to understand conditions related to their sexual function.

The participants were pregnant women with gestational diabetes, who recruited from the offices of internal medicine specialists as well as gynecologists and medical centers of Mazandaran Province. . Also, key individuals including health care providers (gynecologist, endocrinologist, nutritionist, sexologist, reproductive health specialist and sociologist) were included in this study. Two husbands of women with gestational diabetes were also entered in the study.

The inclusion criteria were as follows: pregnant women with gestational diabetes in the current pregnancy, Iranian citizenship, ability to understand and speak Persian, and the lack of other physical and psychological disorders. Purposeful sampling continued with maximum diversity in terms of age, education, economic status, gestational age and variance in sexual function score until data saturation occurred. The criteria for inclusion of the key individuals were interest and ability to express their experiences and opinions in the field of sexual function and related factors as well as complete consent to participate in interview sessions. Purposeful sampling of the group of key individuals was also done for those who had the inclusion criteria. Inclusion criteria for husbands of women with gestational diabetes were at least one month of experience with gestational diabetes, interest and ability to express their experiences and opinions in the field of sexual function and related factors as well as satisfaction to participate in interview

sessions. The study exclusion criteria were also the withdrawal of the participant at each stage of study.

In this study, 15 women with gestational diabetes at age range of 24-38 years, gestational age of 32-38 weeks and total sexual function score of 17-26 were interviewed. The participants had different levels of education (elementary school to PhD), economic status (unfavorable, average, favorable), and number of pregnancies (primigravida or multigravida) and were housewives and employees. The husbands of participants also had different levels of education (elementary to M.A) and employment status (self-employed, employed, worker and unemployed). All participants had single pregnancies and no cognitive or mental disorders. In this study, six key individuals with different work experience (7-22 years) were interviewed as well as two husbands of women with gestational diabetes.

The data collection method included in-depth individual interviews with women diagnosed with gestational diabetes from April to December 2020. The interviews were conducted based on an interview guide containing semi-structured questions. After specifying the question guide, two pilot interviews were conducted. Following a review of their content by the research team, the guide was modified and then utilized. The interview questions for women affected by gestational diabetes were as follow: What are your concerns? How is your sexual function during pregnancy and after gestational diabetes?

Additionally, questions for husbands focused on their understanding and experience of these women regarding sexual function and related factors, such as:"How is your/women with gestational diabetes's/your wife's physical, mental, and social status after gestational diabetes"? Specialist-related questions included :

What factors do you think affect the sexual function of women with gestational diabetes? What strategies do you suggest to promote sexual function?"

In medical centers, the interview was held in a separate, quiet room. At the time of interview, the researcher, while introducing himself/herself, explained the objectives of the project and obtained informed consent regarding the possibility of recording their interview and ensuring the confidentiality of all their data. By asking for personal information, establishing a good relationship and gaining the trust of the participants, the conditions for conducting the interviews were provided. The women were then asked to share their understandings and experiences on the physical, mental and social conditions after gestational diabetes. Subsequent questions were asked based on the individuals' initial answers and the interview guide questions. As the study progressed, the direction of subsequent interviews was determined after data collection, simultaneous analysis, and class formation. In addition, during the interview, probing questions were asked such as "Can you explain more about this? Could you give an example of what happened to you so that I could better understand what you do you mean?" In this study, facial expressions and non-verbal gestures of the participants were taken into account. Also, writing field notes from the beginning was a key to clarify the direction of the next questions. At the end of interview, the participant was asked to say if he/she had something to say, and finally, after appreciating the participant, the possibility of conducting further interviews was emphasized. The duration of each interview was 30-60 minutes on average.

In the present study, the data obtained from the interview were analyzed by Graneheim and Lundman conventional content analysis approach. Thus, after conducting each interview, in the shortest possible time, the recorded information was reviewed word for word on paper, and then analyzed through using MAXQDA10 software. We defined of meaning units as words, sentences, or paragraphs containing aspects related to each other in content and context. In the next step (condensation), we reduced the size of the meaning units while preserving the core meaning and attempted to indicate both manifest and latent content with a description close to the text. A further step involved abstracting and labeling the condensed units of meaning with codes. After the coding process, all the codes were compared with each other and classified into categories and subcategories

based on similarities and differences. Eventually, a theme was developed after rereading, and the analysis process described above was implemented.

In this study, the criteria stated by Lincoln and Guba, namely credibility, dependability, transferability and confirmability were used to maintain the trustworthiness of data (11). In order to increase the credibility of the results, various methods such as allocating sufficient time to collect data and checking the findings with the participants were used. Peer review was another method to confirm the credibility of qualitative research. For this purpose, the emerging categories were presented to colleagues who had experience on the studied phenomenon as well as qualitative research method to review the data analysis process and give comment on its accuracy. For the dependability of results, we took advantage of the external observer method to investigate the possibility of similar understanding of the researcher and search for conflicting cases. This was illustrated by the presentation of initial codes for the interpretation of participants' experiences and examples of how categories and excerpts are extracted from interview texts for each category. For the transferability of the research, the results were presented to those who did not participate in this study to judge the similarity between the study results and their experiences. For the confirmability, the text of a number of interviews, extracted codes and categories, the way the categories were formed and the theme were presented so that external observers and those who did not participate in this study could investigate the process of data analysis.

The present research was approved by Ethics Committee of Shahid Beheshti University of Medical Sciences in Tehran (Iran) with the code IR.SBMU.PHARMACY.REC.1397.263. All ethical considerations such as obtaining informed consent, the privacy and confidentiality of information were observed. Prior to each interview, the participants were reassured that they could leave the study at any time, without compromising their caregiving process.

Results

Using the transcripts from interviews with participants, meaning units, condensed meaning units and primary codes were extracted for further analysis (Table 1). Then, the codes were classified into categories, sub-categories, and the main theme. Data analysis led to the emergence of 390 primary codes, 57 main codes, 8 main categories, 23 subcategories, and finally four themes were revealed (Table 2).

1. Sexual problems in women with gestational diabetes

In the process of reducing data, two categories of changes in sexual function of women and sexual non-interaction of couples revealed the theme of sexual problems in women with gestational diabetes.

1-1. Changes in sexual function of women

1-1-1. Unfavorable sexual function

Many participants stated that they had poor sexual function due to reluctance caused by stress, dryness and dyspareunia, and dissatisfaction with sex.

"I eat, I'm stressed. I do not eat, I'm stressed. I sleep in the evenings, I'm stressed that I'm not active. I want to get a test result, I'm stressed. In general, I'm stressed so I have no sexual desire"(primigravida, 36 years old, on diet therapy).

1-1-2. Preferring intimacy without sexual intercourse

1-2. Lack of sexual interaction between couples

Many participants stated that they preferred physical and emotional intimacy without sexual intercourse.

"I prefer a relationship by hugging and kissing" (multigravida, 30 years old, on diet therapy).

Table 1. Example of emerging a category

Meaning unit	Condensed meaning unit	Code	Subcategory	Main category
"I eat, I'm stressed. I do not eat, I'm stressed. I sleep in the evenings, I'm stressed that I'm not active. I want to get a test result, I'm stressed. In general, I'm stressed so I have no sexual desire"	Lack of desire for sex due to stress caused by diabetes	Sexual reluctance caused by stress	Undesired sexual function	Changes in sexual function of women
"A mother who worries about the effects of diabetes on her baby and, after taking the drug, worries about the effect of the drug on the baby, certainly has these worries that affect and reduce her desire"	Lack of desire for sex due to worries about the health of the baby			
"I had a lot of pain during intercourse because I was dry"	Having pain during intercourse due to dryness	Dryness and dyspareunia		
"Having pain is due to lack of lubrication and arousal due to the absence of desire"	Having pain during intercourse due to lack of lubrication and lack of arousal			
"The only party to the relationship is not me, it's my husband. It makes you unhappy. You may not suffer because you love the other party, but well, have fun, no, no"	Just having sex to satisfy the spouse	Dissatisfaction with sex		
"Reduced satisfaction is due to the unpleasantness of sex because of diabetes and worries about the baby".	Reduced satisfaction due to the unpleasantness of sex, diabetes and worrying about the baby			
"I prefer a relationship of hugging and kissing"	Preferring hugs and kisses to sex	Preferring physical intimacy without sex	Preferring intimacy without sex	
"When he hugs you, he sympathizes you, the peace that your husband gives you is different from everything. I prefer that much"	Preferring love and sympathy to sex	Preferring emotional intimacy without sex		

1-2-1. Lack of sexual verbal interaction of couples

Many participants stated that they did not have verbal sexual interaction because they did not talk about sexual interests and problems to each other.

"I could never say anything to my husband about my sexual needs. Whereas if he loved or caressed me, a good sexual intercourse would be possible" (multigravida, 32 years old, on insulin therapy).

1-2-2. lack of non-verbal sexual interaction of couples

Many participants stated that they had non-verbal sexual non-interaction due to restraint of sexual desire for each other because of embarrassment and not expressing sexual desire to each other without shame.

"Although I am a mother of three children, I am still ashamed of my husband" (multigravida, 33 years old, diet therapy).

Table 2. Classification of Theme, main categories and subcategories

Subcategories	Main categories	Themes
Undesired sexual function Preferring intimacy without sex	Changes in sexual function of women	Sexual problems in women with gestational diabetes
Lack of sexual verbal interaction of couples Lack of sexual verbal interaction of couples Rejection of the spouse role	Lack of sexual interaction between couples	
Worrying about the health of the fetus Worrying for their own health Helplessness in playing the role of mother Nutritional problems Problems of insulin consumption Problems of tests and visits	Concerns related to gestational diabetes	Worries and problems caused by gestational diabetes
Sleep disorder due to polydipsia Sleep disorder due to polyuria	Sleep disorders	
Lack of facilities and organizational support Problems with service costs	Financial and organizational problems	Non-comprehensive services
Inefficient services in treatment and counseling Insufficient sources of information	Lack of access to centralized services	
Diet and medication Dealing with religious matters and thinking positive Distracting	Self-care	Need to empower the individuals and significant others
Positive role of the spouse Support of the family and others Support of the health care providers	Social support	

Many participants stated that they experienced the rejection of the spouse role because of inefficient interaction with their spouse and reduced sexual intercourse due to fear of ill-fated consequences.

"I'm dealing with something out of the ordinary. Ever since I found out I had diabetes because I'm stressed and busy, I do not want to be with my husband" (primigravida, 27 years old, on insulin therapy).

2. Worries and problems caused by gestational diabetes

In the process of reducing data, the categories of concerns related to gestational diabetes and sleep disorders revealed the theme of worries and problems caused by gestational diabetes, which exacerbated sexual dysfunction in women with gestational diabetes.

This subcategory consists of two codes: worrying about the health of the fetus and the child becoming diabetic in the future.

"I'm worried about the baby's health. Mental conflicts like this have the biggest effect on sex" (primigravida, 27 years old, insulin therapy).

This subcategory consisted of two codes: worrying about not having a normal delivery and concerns over the persistence of diabetes.

"When the physician says you can't have a normal delivery because the baby is overweight, you get stressed, you don't think about anything else" (multigravida, 30 years old, on diet therapy).

2-1-3. Helplessness in playing the role of mother

This subcategory consists of two codes: impaired child care and disrupted fetal care.

"Last year, I asked my daughter about her lesson. This year I am bored because of my diabetes. I will not help her with her homework. My mind is involved in everything, I do not think about anything else" (multigravida, 37 years old, insulin therapy).

2-1-4. Nutritional problems

This subcategory consists of three codes of mental involvement in nutrition, frequent hunger, and lack of access to alternative foods.

"My mind is concentrated on the fact that I got diabetes, what to eat or not to eat now. So, I do not think about anything else" (primigravida, 36 years old, on diet therapy).

2-1-5. Problems of insulin consumption

This subcategory consists of five codes: stress about insulin use, concern regarding insulin costs, difficult access to insulin, difficulty in taking insulin at parties, and fear of insulin addiction.

"It's a stressful thing to be on the lookout for injecting insulin on time. I no longer have the patience to do anything else" (primigravida, 32 years old, on insulin therapy).

2-1-6. Problems of tests and visits

This subcategory consists of four codes: stress about test results, stress due to the cost of tests and visits, tiredness from repeated testing and visits, and stress due to the long test time.

"I always have a test and let me have the stress of what the result will be. The same stress makes me feel worse. It takes 3-4 days to get the result. I like to get a quick result. My whole mind is involved and I do not think about anything else"(multigravida, 30 years old, diet therapy).

2-2. Sleep disorders

2-2-1. Sleep disorder due to polydipsia

Some participants stated that sleep disorder due to frequent thirst and alsobecause of dry mouth and throat are the factors affecting changes in sexual function.

"I was thirsty at night and I kept getting up and drinking water. I did not sleep well. That was enough for me not to think about anything else (sex)"(multigravida, 33 years old, diet therapy)

2-2-2. Sleep disorder due to polyuria

Some participants stated that sleep disorder due to repeated nocturnal urination was a factor affecting changes in sexual function.

"The bathroom, I went a lot and my sleep was disturbed. I did not have the patience to do anything else" (primigravida, 32 years old, on insulin therapy).

3. Non-comprehensive services

The theme of non-comprehensive services emerged in the process of reducing data from categories of financial and organizational problems due to treatment and lack of access to centralized services, which caused and exacerbated sexual dysfunction in women with gestational diabetes.

3-1. Financial and organizational problems

3-1-1. Lack of facilities and organizational support

This subcategory consists of two codes: lack of a center for high-risk pregnancy and lack of standard guidelines for gestational diabetes management.

"One day, I have to go for a test and then get the results of my test. I go to visitan internal medicine specialist. Then, another day, I go to a gynecologist to do my pregnancy routine. Sometimes, I do not. I just check my glucose level with an internal medicine specialist. With all these, who can think of sex?" (Multigravida, 38 years old, on insulin therapy)

3-1-2. Problems with service costs

This subcategory consisted of two codes: high cost of treatment and lack of insurance coverage.

"Economically, the cost of tests is very high. How many times can you pay 20,000 tomans for a fasting glucose level test, or how many times can you go to a nutrition consultant? With these problems, can anyone think of anything else?" (Reproductive Health, 7 years of experience).

3-2. Lack of access to centralized services

3-2-1. Inefficient services for treatment and counseling

Some participants stated that lack of teamwork in the treatment process and negligence of the treatment team to sexual issues are the factors affecting changes in sexual function.

"Sexuality is ignored by the medical team because of their incompetence or lack of importance and misconceptions. Therefore, many do not get involved in these issues" (Sexual Medicine Fellowship, 20 years of experience).

3-2-2.Insufficient sources of information

This subcategory consists of two codes: obtaining information from radio and television and conflicting information from Internet sites.

"Mass media like radio and television that communicate with people can also train them in the form of subtle messages during a movie, and/or an advertisement. The programs in

which a physician comes to talk for an hour are not very public, only the person who has that particular problem sits in front of the TV and listens to them. Special short messages should convey the note about gestational diabetes that these people need support of their spouses, they need to know that this problem will be solved and that it is not a problem that cannot be solved" (sociologist, 12 years of experience).

4. Need to empower the individuals and significant others

In reducing the data process from categories of self-care and social support, the theme of the need to empower the person and important people was revealed, which was one of the ways to improve sexual function in women with gestational diabetes.

4-1. Self-care

4-1-1. Diet and medication

The majority of participants stated that diet and insulin injections were effective in reducing concerns and thus improving the sexual function.

"I'm stressed that diabetes remains or that it damages the fetus. I should follow a very good diet to the extent that I am allowed to exercise so that I can control glucose level. Then, other things can be thought of" (primigravida, 27 years old, on insulin therapy)

4-1-2. Dealing with religious matters and positive thinking

Most of the participants stated that religious beliefs and paying attention to positive points are effective factors in promoting sexual function.

"I relax by reading the Quran and praying. I feel better. It can affect other things" (primigravida, 25 years old, on diet therapy)

4-1-3. Distracting

The majority of participants stated that maintaining a good mood through socializing and interpersonal communication, mental preoccupation with reading books and doing favorite pastimes are effective factors in promoting sexual function.

"I go out with my friends. It's great when we laugh. My mood goes up and I'm fine, I'm not having a problem with sex" (multigravida, 29 years old, masters, on insulin therapy)

4-2. Social support

4-2-1. Positive role of the spouse

The majority of participants stated that the emotional support of the spouse and his participation in their care are effective factors in promoting sexual function.

"In my opinion, there should be peace at home, which must be provided with the availability of the things that are needed. At home, I should help her as much as possible so that she gets less tired. These things are effective" (Husband, 44 years old).

4-2-2. Support of the family and others

The majority of participants stated that the emotional support of the family and participation in the care by the family and peers are effective factors on promoting sexual function.

"The family empathy reduces stress. You calm down and can think about sex" (multigravida, 30 years old, on diet therapy)

4-2-3. Support of the health care providers

The majority of participants stated that education and counseling about gestational diabetes as well as regarding sexual function are effective factors in promoting sexual function.

"The couples should be trained about the physiological, anatomical, psychological, and social aspects of sexuality during pregnancy" (sociologist, 12 years of experience).

Discussion

One of the themes of this study was sexual problem in women with gestational diabetes. Based on other investigations, sexual problem is a general term used in cases of poor sexual function without observing individual distress. The women with sexual problems have concerns about their physical function, emotions, and social relationships. However, there is a strong tendency to ignore sexual problems, and in some cases, these are caused by other complications and the focus is on non-sexual problems (12).

The majority of participants in the present study considered sexual reluctance caused by stress, dryness and dyspareunia, as well as dissatisfaction with sex as reasons for unfavorable sexual function and demanded physical and emotional intimacy without coitus. In a qualitative study, reduced sexual desire and activity were experienced as one of the limitations in the role of spouse among women

with gestational diabetes (13). The cause of sexual dysfunction in women with gestational diabetes is the stress and anxiety due to the diagnosis of gestational diabetes (14). These anxious and worried women are less likely to express their feelings and desires because cortisol blocks the function of oxytocin in the brain and prevents a woman from wanting to have sex (15).

The majority of participants in this study considered verbal and non-verbal sexual interaction of couples and the rejection of the role of spouse as factors affecting Lack of sexual interaction between couples. A study reported that most couples had little information about the sexual response cycle (16). In addition, the need for hugging and touching increases in pregnant women who prefer physical intimacy over sex (17).

Our findings showed that the majority of participants considered concerns about the health of the baby and themselves as factors related to gestational diabetes. In a study, the participants raised concerns about prenatal and postnatal health, including preterm delivery and fetal death, as well as fears of future hyperglycemia and diabetes for the mother (6).

Most of the participants in this study considered the helplessness of playing the role of mother as one of the concerns related to gestational diabetes. In a study, women with gestational diabetes did not feel well because they could not play their maternal roles well and described themselves as ill (18).

A large number of participants in this study considered nutritional problems as a factor of gestational diabetes-related concerns. In another study, when gestational diabetes was diagnosed, some women found diet and life style change as challenging and difficult (19).

In the present research, some participants considered problems with insulin as a factor of gestational diabetes-related concerns. The results of a study found that half of the pregnant women with diabetes who received insulin experienced more stress than those who were on a diet (6).

The majority of pregnant women in our study considered test problems and visits as factors associated with gestational diabetes. Based on another study, when a person's body metabolism changes frequently, so does the need for frequent referrals for medical care, which can cause stress and confusion in a sensitive situation such as pregnancy (20).

Also, changes in sexual function are the result of multiple psychological factors that, along with diabetes care and counseling, influence couples' emotional intimacy and their sexual life (7). Therefore, based on the findings of our study, the concerns and problems of women with gestational diabetes should be considered so that they can take better care of themselves, and as a result, their stress and worry can be controlled.

In the present study, a number of participants considered sleep disorders due to polydipsia and polyuria as factors affecting changes in sexual function. In a qualitative study, women with gestational diabetes suffered from thirst and polyuria due to high glucose level, which adversely affected their life (21). Therefore, based on the findings of our study, the higher the levels of anxiety and insomnia and problems in this aspect of health, the higher the frequency of sexual disorders.

The participants in the present study mentioned the negative impacts of the unavailability of a high-risk pregnancy center and standard guidelines for managing gestational diabetes on their sexual problems. In a qualitative study, some women preferred that pregnancy and gestational diabetes care be grouped together rather than separated (22).

Some of the participants in the present study mentioned the negative effect of high treatment costs and lack of insurance coverage on their sexual problems. In a qualitative study, women stated that the necessary dietary changes recommended by Diabetes Education Program, including increased intake of protein, fruits and vegetables were expensive, and considered it necessary to have a health care organization to care for the requirements of women with gestational diabetes (20).

The negative impacts of lack of teamwork in the treatment process and carelessness of the treatment team to sexual issues was considered effective on sexual problems by a number of participants in the present study. In a study, patients having good counseling and interaction with the treatment team received the necessary

recommendations for disease management as well as motivation to follow the treatment plan (23). In fact, based on the findings of our study, health services are often not prepared for the needs of diabetics, and given the sexual problems of these patients, it seems that consideration of sexual problems and counseling with patients should be more carefully planned in the health care system.

Receiving inadequate and at times contradictory information from radio and television as well as Internet sites was cited as a negative factor on sexual problems of some participants in the present study. In a qualitative study, one of the main problems of women with gestational diabetes was the lack of appropriate information and incomplete training about diabetes (22). In fact, based on the findings of our study, providing targeted information in the media through long-term programs can be beneficial for patients in terms of self-care and stress management.

The participant's of the present study cited the positive effects of diet and insulin injection on their sexual problems. The results of a study have shown that various factors such as perception of a patient of the disease, diet adjustment, self-control of glucose level, and self-injection of insulin play an important role in managing and increasing the quality of life (24).

The religious beliefs and attention to positive thinking were a factor exerting positive influence over sexual problems among a number of our participants. According to another study, spiritual resources such as prayers and reciting the Qur'an, using spirituality and emotional mechanisms of religious confrontation have a significant and inverse relationship with pregnancy anxiety and stress (25).

Maintaining morale through interpersonal interaction and communication, mental engagement by reading books, and doing favorite pastimes positively affected the sexual problems according to some of our participants. In a qualitative study, the subjects used coping techniques such as engaging in other tasks to adapt to their disease (26).

Emotional support of spouse and his participation in care was another factor positively influencing the sexual problems in a number of our participants. In a study, it was shown that from the perspective of a patient with diabetes, support by spouse leads to less stress, better marital interaction, and greater adherence to diabetes management (27).

Similar to our research, a qualitative study in Iran showed that support was one of the perceived needs of mothers with gestational diabetes, and most mothers stated that family support could help them cope better (22). Besides, in group counseling, due to the similarity between the group members in terms of experiences and problems, support can be effective on expressing doubt and worries about the health status of individuals and finding appropriate solutions to reduce the health problems of the group members (28).

Education and counseling about gestational diabetes and sexual function was another positive factor on sexual problems according to some participants in the present study. In a qualitative study, one of the main results was that the mothers needed quality continuous training and counseling. The women with gestational diabetes should acquire skills and abilities for controlling glucose level, injecting insulin, and planning a healthy diet. The results also showed that counseling and psychological support are the most basic educational needs of self-care in gestational diabetes (29).

Since no qualitative study has been reported in this field in Iran, this research is significant to explain the understanding and experience of sexual function and its related factors in women with gestational diabetes. The present article has a great contribution to designing a special educational package for the target group. Also, it is possible to improve the sexual function of women with gestational diabetes using multidisciplinary intervention and taking into account physical, psychological and social factors.

Like other qualitative studies, generalizability, which is typically greater in quantitative research, was one of the limitations of this study. However, in this research, different strategies including purposeful sampling with maximum diversity were used to increase the credibility and objectivity of the study. Hence, the results of the present study seem to have acceptable dependability.

Conclusion

In this research, sexual dysfunction in women with gestational diabetes was revealed in the form of sexual problems in these women. In fact, worries and problems caused by gestational diabetes that develop in women with non-comprehensive services can affect their sexual function. Therefore, self-care, positive role of husband, support of family, peers and health care providers are necessary to empower individuals and significant others.

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Conflicts of interest

Authors declared no conflicts of interest.

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