

Prioritizing the Psychosocial Support Needs of Mothers with Gestational Diabetes: A Delphi Study

Abstract

Background: Gestational diabetes is the most common medical complication in pregnancy, and the psychosocial health of women suffering from this condition affects their adherence to treatment and self-efficacy. However, since it is not possible to design interventions dealing with all of these needs, the aim of this study was to prioritize the psychosocial supportive needs of women with gestational diabetes. **Materials and Methods:** This was a modified Delphi design study involving 22 experts who were selected using purposive and snowball sampling methods. The study was conducted between April 2021 and June 2021. First, the psychosocial needs of diabetic pregnant women were extracted through a qualitative study involving interviews with multidisciplinary specialists and diabetic pregnant mothers (22 participants) and a systematic review of reputable scientific databases. Throughout the two Delphi stages, the questionnaire was classified, quantified, and analyzed. **Results:** Based on the results of this study, the following are the top priorities when addressing the psychosocial needs of mothers with gestational diabetes: paying attention to and identifying the mother's worries and anxiety, husband and family support for diabetic pregnant women, the inclusion of specialized nutrition counseling services in mothers' treatment plan, timely education of mothers about diabetes and its complications, and proper nutrition for diabetic mothers. **Conclusions:** The priorities of the supportive needs obtained in this study can be used to design interventions aimed at promoting psychosocial health, reducing stress and anxiety, and improving medication adherence in women with gestational diabetes.

Keywords: Delphi study, gestational diabetes, psychosocial support system

Introduction

Gestational Diabetes Mellitus (GDM) is the most common medical complication in pregnancy. It is one of the most important health concerns in the twenty-first century.^[1] This condition affects approximately 1–24% of pregnancies.^[2] According to a systematic review (2021), the prevalence of GDM in Iran has been reported to be 4%.^[3] The prevalence of gestational diabetes is reported to be 11.5% in Tehran,^[4] 18% in Hamadan,^[5] and 3.3% in Yazd.^[6]

Gestational diabetes is associated with maternal and fetal risks during pregnancy, predisposing the mother to gestational diabetes in subsequent pregnancies, and type 2 diabetes during her entire life.^[1,7] Pregnant women experience higher levels of stress during pregnancy,^[8] and if it is accompanied by problems and complications such as diabetes, it will impose undue stress on the mother.^[9] Gestational diabetes

is associated with the need for intense self-management, regular monitoring of capillary blood sugar, changes in diet and lifestyle, and frequent injections of insulin or other medications. In addition to dealing with the above, women with gestational diabetes should manage the condition throughout the last trimester of pregnancy. Studies show that maternal pregnancy stress may accelerate gluconeogenesis and glycogen breakdown and elevate glucose levels in pregnant women by disrupting the pituitary–hypothalamic axis and increasing Cortisol, Adrenocorticotropic Hormone (ACTH), glucocorticoid, glucagon, and catecholamine levels.^[9,10]

In addition, emotional problems are another major psychological issue for women suffering from gestational diabetes. Studies show that the prevalence of depression in women with diabetes is higher than that in the general population of pregnant women.^[10,11] There is growing evidence that

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psychological and environmental stress during pregnancy are detrimental to the successful outcomes of pregnancy and infancy.^[12] In this respect, one of the factors affecting the quality of life of pregnant women, especially pregnant women with high-risk and complicated pregnancies, is receiving psychosocial support. Several studies have shown the positive effects of psychosocial interventions on improving the mental health of mothers with gestational diabetes.^[13-15] Zaheri *et al.* (2016),^[16] for instance, conducted a study to determine the effect of Cognitive-behavioral stress management on reducing mental stress in diabetic pregnant women. They found that this intervention reduces stress in women with gestational diabetes, which may improve pregnancy outcomes, especially when their blood sugar is not adequately controlled by medication due to stress. Jelsma *et al.* (2018)^[17] also investigated the psychological determinants of physical activity and diet in women with a history of gestational diabetes and found that a lifestyle intervention based on psychological determinants for overweight women with a history of gestational diabetes is effective in preventing type 2 diabetes. A systematic review by Nielsen *et al.*^[18] showed that a number of factors, including social factors can affect blood sugar control programs and services in pregnancy. However, the psychosocial supportive needs of individuals in any society must first be identified and prioritized.^[19] In fact, the first step to increase the effectiveness of an intervention is to identify the priority areas to which more resources should be allocated, and only then will it be possible to design specific strategies and evaluate their results.^[20] Also, priority-setting for needs enables funders and officials to support research that is most needed and aligned with the priorities of the stakeholders.^[21] Therefore, the present study is aimed to prioritize the psychosocial supportive needs of women with gestational diabetes.

Materials and Methods

This article was part of a PhD dissertation in Midwifery conducted at Ahvaz Jundishapur University of Medical Sciences. In this study which was conducted between April 2021 and June 2021, the modified Delphi design was used to elicit opinions from a group of experts on the subject of psychosocial needs of women with gestational diabetes. The Delphi method involves two or more rounds of discussion that ultimately lead to group consensus.^[13] Because in the first stage of Delphi, instead of an unstructured questionnaire given to experts, the qualitative and systematic review study methods were used to obtain a structured questionnaire, we utilized the modified Delphi. Participants in the Delphi group include experts on the subject of interest who have sufficient experience and knowledge to comment on that subject and are willing to participate in the study.^[22] Key informants were identified based on their sufficient expertise, information, and experience in the care and treatment of patients with

gestational diabetes and supportive care. Participants were selected using purposive and snowball methods. These individuals included university professors and policymakers who had a background in theoretical and practical teaching of courses on gestational diabetes and supportive care, and had work experience in the executive divisions related to diabetes. Also, midwives and nurses with at least one year of experience in the maternity ward and prenatal care wards, gynecologists, clinical psychologists, endocrinologists, reproductive health specialists, and nutritionists were selected as Delphi members. Participants were invited to participate in the study by email or in person. Before the questionnaire was sent to the participants, an informed consent form was completed after fully explaining the purpose of the study and the way it was going to be conducted. Also, a checklist containing basic information including name, e-mail address, expertise, work history, and field of activity was completed. The participants were asked to complete a Delphi questionnaire in each round. If they did not complete it within a week, they were sent a reminder email or text message. Depending on the time and resources available, the scope of the subject matter, and the homogeneity or heterogeneity of the participants, the number of Delphi participants is usually between 10 and 100, with an average of 10–18 participants being actually selected.^[17,18] In this study, 40 multidisciplinary experts were initially invited to participate, of whom 22 (55%) accepted the invitation. The Delphi panel members included three PhD holders in reproductive health, three gynecologists, one internist, two endocrinologists, three nutritionists, six clinical psychologists, three midwives, and one nurse with a bachelor's degree.

Prior to the Delphi process, the psychosocial supportive needs of diabetic pregnant mothers were first identified in four areas through a) conducting interviews with multidisciplinary specialists and diabetic pregnant mothers using conventional content analysis^[23] and b) a systematic review of evidence obtained from a reputable scientific database.^[24] These areas included needs for psychological support, needs for interpersonal social support, needs for social structural support, and needs for educational support. At first, an unstructured open-ended questionnaire was developed to be reviewed by the research team which consisted of six multidisciplinary experts so that the extracted topics could be used for generating ideas and have a bird's eye view of the subject under study. Each expert was asked to openly brainstorm any personal ideas and opinions, and return a brief list of topics of interest anonymously. At this stage, an attempt was made to collect all relevant answers. In the first round, a structured questionnaire was used which was quantified by asking the experts to rate each item using a 10-point Likert scale (1 = least important; 10 = most important). Also, a column in this questionnaire was devoted to the participants' opinions in order to identify new ideas, and

to give them the opportunity to correct, interpret, eliminate, and explain their strengths and weaknesses, and in some cases, the participants were asked to state the rationale behind prioritization of items. After collecting the second questionnaire, statistical analysis was done. This round was concluded with the convergence of the opinions of the participants. In the second round, the participants were asked to review the answers again, and if necessary, to reconsider their views and judgments. There was no attrition of participants in this round. They were then asked to state their reasons for not reaching a consensus, and to rescore the importance of each item considering its median and mean score. Finally, the collected data from the Delphi process were analyzed by IBM SPSS ver. 22. Based on descriptive statistics such as frequency, mean, and standard deviation, the status of each of the studied options was examined.

Ethical considerations

Ethical approval for this study was granted by the Ethic Committee of Ahvaz Jundishapur University of Medical Sciences (Ref. ID: IR.AJUMS.REC.1399.231). All participants signed written consent forms, and the participants and their answers remained fully anonymous throughout the study.

Results

The mean age of the respondents was 42 (7.70) years, and their mean work experience was 12.54 (7.30) years. The

characteristics of the participants in the Delphi are given in Table 1.

Results of the ranking of the respondents’ opinions about the needs for psychological support showed that among the 9 components in this category, “Attention to diabetic pregnant mothers’ worries and anxiety and identifying them” with a mean and standard deviation of 8.95 (1.61) had the highest importance while “Encouraging mothers to use spirituality to reduce worries and anxieties” with a mean and standard deviation of 6.54 (2.38) had the least importance. The results of the ranking of respondents’ opinions on the needs for psychological support are shown in Table 2.

The results of ranking the respondents’ opinions on the needs for interpersonal social support showed that among the eight components in this category, “Support of the husband and the family of a diabetic pregnant mother” with a mean and standard deviation of 9.31 (1.61) had the highest importance while “Strengthening social networks such as creating virtual groups for mothers” with a mean and standard deviation of 5.86 (2.06) was the least important component. The results of the ranking of respondents’ opinions on interpersonal social support are shown in Table 3.

As far as the needs for sociostructural support were concerned, the results of ranking the respondents’ opinions on these needs showed that among the 11 components in this category, “Inclusion of specialized nutrition counseling

Table 1: The characteristics of participants in Delphi rounds

Gender	Educational level	Age	Duration of work	Expertise
Female	PhD of Reproductive health	45	15	Associate Professor
Female	PhD of Reproductive health	50	20	Associate Professor
Female	PhD of Reproductive health	47	16	Associate Professor
Female	Gynecologist	40	2	Associate Professor
Female	Gynecologist	37	3	hospital employee
Female	Gynecologist	50	12	hospital employee
male	Internist	53	25	Head of Health Network
male	Endocrinologist	48	15	Assistant professor
male	Endocrinologist	52	24	Associate Professor
Female	Nutritionist	52	20	Assistant professor
Female	Nutritionist	35	8	Nutritionist of a referral gynecological hospital
Female	Nutritionist	30	2	Office worker
Female	PhD* in Clinical Psychology	36	10	Associate Professor
Female	PhD* in Clinical Psychology	45	18	Associate Professor
Female	MSc in Clinical Psychology	32	4	Health center consultant
male	PhD* in Clinical Psychology	51	21	Associate Professor
male	PhD* in Clinical Psychology	35	7	Assistant professor
Female	PhD* in Clinical Psychology	36	5	Assistant professor
Female	MSc** in Midwifery	41	16	Instructor
Female	Bachelor of Midwifery	30	6	Health center midwife
Female	Bachelor of Midwifery	34	9	Health center midwife
Female	Bachelor of nursing	45	18	Hospital nurse

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Table 2: Prioritize the psychological support needs of women with gestational diabetes

Rank	Psychological support needs	Mean (SD)
1.	Attention to the worries and anxieties of diabetic pregnant mothers	8.95 (1.61)
2.	Teaching methods to reduce stress and anxiety such as relaxation and meditation	1.58 (8.95)
3.	Screening for mothers' attitudes toward their illness, patient's expectations of treatment, mood, diabetes-related quality of life	8.80 (1.23)
4.	Mental health screening and assessment of anxiety and depression with valid tools	8.18 (1.56)
5.	Encourage the mother to express feelings and needs and to have a listening ear	8.09 (2.28)
6.	Psychological counseling at the beginning of hospitalization due to illness	8.00 (1.54)
7.	Integrate psychological interventions such as (motivational interventions, stress management strategies, coping skills training, and family therapy) into diabetes care programs	7.54 (2.19)
8.	Psycho-emotional support for family members	7.31 (2.19)
9.	Encourage mothers to use spirituality to reduce anxiety and worry	6.54 (2.38)

Table 3: Prioritize social interpersonal supportive needs of women with gestational diabetes

Rank	Interpersonal supportive needs	Mean (SD)
1.	Husband and family support a diabetic pregnant mother	9.31 (1.61)
2.	Facilitate effective communication between patients, families, and caregivers	9.04 (1.58)
3.	Enabling effective and fast communication (telephone or virtual) with health care providers when needed	8.00 (2.22)
4.	Use the mother-tongue service provider to establish a proper caregiver-mother relationship	8.00 (2.22)
5.	Respectful treatment of people with gestational diabetes and their caregivers by health and social care workers	8.00 (2.22)
6.	Identify members of the mother's social support network to help identify, prevent, and resolve psychosocial problems	7.02 (2.10)
7.	Creating peer groups of mothers with gestational diabetes to share experiences	7.54 (2.19)
8.	Strengthen social networks and virtual groups and mothers' membership in it	5.86 (2.06)

services in mothers' treatment plan" with a mean and standard deviation of 9.04 (1.58) was the most important component, whereas "Creating home visit services" with a mean and standard deviation of 6.54 (2.63) was the least important. The results of the ranking of respondents' opinions on the needs for sociostructural support are shown in Table 4.

Finally, with respect to the respondents' opinions on the needs for educational support affecting the mental health of a pregnant diabetic mother, the ranking showed that among the 13 components in this category, "Timely education of patients about diabetes and its complications" with a mean and standard deviation of 9.63 (1.09) and "Timely education of patients on proper nutrition for diabetic mothers" with a mean and standard deviation of 9.40 (1.36) were the most important components while "Educating staff on safe psychiatric drugs in pregnancy" with a mean and standard deviation of 6.40 (3.00) was the least important. The results of the ranking of respondents' opinions on the needs for educational support affecting mental health are shown in Table 5.

Discussion

The present study was designed and conducted with the aim of priority-setting for the psychosocial supportive needs of women with gestational diabetes in Iran. Based on the results of this study, the top priorities are as follows: "paying attention to diabetic pregnant mothers' worries and anxiety

and identifying them," "support of the husband and the family of diabetic pregnant mothers," "inclusion of specialized nutrition counseling services in the mothers' treatment plan," and "timely education of patients about diabetes, its complications, and proper nutrition of diabetic mothers."

These findings were initially derived from the needs of mothers and were then compiled based on the consensus of the opinions of other stakeholders. To the best of our knowledge, no research has yet specifically prioritized the psychosocial support needs of mothers with gestational diabetes. However, there are very limited studies addressing research priorities in gestational diabetes based on the concerns of diabetic mothers, service providers, and researchers.

A study conducted in England aimed to determine future research priorities in gestational diabetes. In this study, 18 important concerns of mothers, professionals, health care workers, and their support networks were determined using content analysis and systematic review. In the final phase of this study which included 25 participants doing two rounds of priority-setting, 10 priorities were determined. Conducting research on the psychological and health needs of diabetic mothers and on the support needs of mothers was among the priorities in this study.^[25] However, the authors did not mention the components and subpriorities of mental health.

One of the 10 priorities identified by Finer *et al.*^[26] in their United Kingdom (UK) Delphi study was providing

Table 4: Prioritize structural social supportive needs of women with gestational diabetes

Rank	Structural social support needs	Mean (SD)
1.	Include specialized nutrition counseling services in the mothers' treatment plan	9.04 (1.58)
2.	Include psychological counseling in mothers' treatment plans	8.72 (1.45)
3.	Provide a glucometer and teach mother and wife how to work with it	8.59 (2.13)
4.	Access to well-equipped and advanced medical services	8.54 (2.01)
5.	Bearing the costs of hospitalization, medicine, and testing by the government and health insurance coverage	8.45 (2.44)
6.	Provide nutrition package for low-income mothers	8.27 (2.43)
7.	Provide effective facilities for entertaining mothers during hospitalization (encouragement to read books, access to TV and CDs, daily psychologist visits)	7.31 (2.1)
8.	Access sports advice, sports coach, and club	7.04 (2.43)
9.	Funding for sports and clubs by the Ministry of Health during and after pregnancy	7.00 (2.54)
10.	Establishment of counseling and physical activity training centers and classes in person in health centers and hospitals	6.81 (2.42)
11.	Establish home visitation services	6.54 (2.63)

Table 5: Prioritize informational supportive needs of women with gestational diabetes

Rank	Informational supportive needs	Mean (SD)
1.	Timely education of the patient about diabetes and its complications	9.63 (1.09)
2.	Timely education of patients about proper nutrition of diabetic mothers	9.40 (1.36)
3.	Preparation and presentation of educational content for diabetic mothers for self-care (self-care education)	9.13 (1.48)
4.	Timely education of the patient on how to take the medicine	9.04 (1.52)
5.	Timely education of the patient about insulin dose adjustment	9.00 (1.82)
6.	Meal Scheduling Training	8.54 (2.19)
7.	In-service training for staff focusing on gestational diabetes and mental health	8.36 (2.17)
8.	Provide special educational content for the spouse and family and emphasize the importance of practical and psychological support for the mother	8.36 (1.98)
9.	Access guidelines or programs to support mothers with gestational diabetes	8.00 (2.28)
10.	Teaching communication skills to physicians and staff and health care providers	8.00 (2.24)
11.	Timely education of the patient about familiarity with different types of insulin	7.90 (2.63)
12.	Existence of clear and comprehensive job descriptions in national guides to health care personnel	7.86 (2.39)
13.	Teaching safe psychotherapy drugs during pregnancy to health care personnel	6.40 (3.00)

psychological or social support to help people with type 2 diabetes or at risk of developing type 2 diabetes based on individual needs and the impact of stress and anxiety on disease management.

In our study, fear and anxiety at the time of diabetes diagnosis and during pregnancy were reported to be a psychological challenge. Accordingly, the listed priorities are as follows: the necessity of using stress reduction methods, screening mothers in terms of their attitude toward the disease and factors related to it, mental health screening, and encouraging mothers to express their feelings and have their needs heard. Emphasis was also put on the use of psychological interventions in the treatment process, paying attention to psychological support for the family, and encouraging mothers to use spirituality to deal with stress. These are all solutions for promoting psychological support and reducing the fear and anxiety of mothers and families. The reasons for fear include: fear of fetal or maternal complications, fear of being blamed, fear of cesarean section, fear of failure, and fear of coping with social and economic stresses.^[27,28] The priorities set

for the psychological needs are all solutions for providing psychological support for mothers and families, and thus, it is very important to identify these priorities and take them into full consideration.

In the present study, husband and family support was the top priority as far as interpersonal social support was concerned. The importance of husband support has already been mentioned in various studies.^[16,29] Other priorities in this area include facilitating communication with family and especially caregivers and using appropriate technology for this purpose. Also, the presence of caregivers and social workers who speak the mother's tongue, identification of reliable social networks for the mother, creation of virtual or in-person peer groups, and providing support for the mother to join them are among other priorities in this respect.

Another study in Canada involved mothers and service providers as the study participants. Using the deliberative priority-setting method in six working rounds, the content of the training classes, feelings, and emotions related to GDM, and management of patients' needs by health care

providers were investigated. Priorities related to language and culture, mental health and mental illness management, and ensuring continuous communication and messaging by care providers were among the 12 important educational priorities emerging from this study, which indicates the need to pay attention to different aspects of interpersonal social support.^[30]

Based on our results, among the factors affecting sociostructural support, “the inclusion of specialized nutrition counseling services in mothers’ treatment programs” was one of the priorities identified in this study. Also, the provision of counseling facilities, glucometers, access to well-equipped medical and sports facilities, distribution of food packages, reimbursement of treatment costs and insurance, establishment of sports training facilities in medical and health centers, and home visits are other priorities related to sociostructural support. The disease burden of gestational diabetes is estimated to be 1.6 billion United States (US) dollars for GDM.^[31] It is obvious that the provision of structural facilities is financially demanding, so prioritizing sociostructural needs is particularly important from an economic point of view. The American Diabetes Association recommends that women with GDM receive an individual nutrition program as part of their medical treatment.^[32] Several studies have reported a strong correlation between a healthy diet and mental health.^[33-35] In a study conducted in England, future research priorities in gestational diabetes were investigated. Out of the 18 priorities examined, the technology related to diabetes was the chief priority of stakeholders’ research in gestational diabetes.^[25] Another study in Australia also reported the following as the main research priorities to improve diabetes-related foot health and disease: health economics, peripheral neuropathy, education, infection, technology, exercise, and nutrition.^[36] Emphasis has also been put on meeting needs such as drug management of GDM and screening for type 2 diabetes in mothers already diagnosed with gestational diabetes.^[37] The results of a survey in Iran, carried out to determine the priorities of interventions to increase the participation and self-care of diabetic patients, showed that besides the lack of information about complications, other priorities of the patients included diet and physical activity, access to training classes, provision of a suitable place for exercise, and free nutrition counseling.^[38]

According to our results, timely patient education about diabetes, its complications, and proper nutrition of diabetic mothers were identified as the main priorities when it comes to the psychosocial support needs of mothers with gestational diabetes. Also, preparation of educational content, education on using medications and insulin dose adjustment, meal planning, training the personnel about the mental health of patients, and preparing educational content for the husband and family about social support of the women are the next priorities. Previous studies

have shown the effect of various educational methods on increasing self-efficacy and reducing stress and anxiety.^[39,40] Using a four-step Delphi process, Rees *et al.*^[41] in Canada, for example, addressed the involvement of patients and physicians in determining research priorities for gestational diabetes. After the priority-setting process, the top priorities were: questions about a simpler, more accurate, and convenient screening test; GDM risk factors; improved screening of postpartum diabetes; the effect of GDM on the children’s future health; challenges related to lifestyle and mental health; safety, effectiveness, and/or impact of diet and/or medication treatments; appropriate timing for delivery; and how care is provided, organized, or communicated. This result is consistent with the results of our study in that both studies consider timely education about GDM as one of the care priorities.

Another study conducted in the United States also emphasized the priority of behavioral interventions such as educating diabetic mothers about the risks of diabetes and supporting them in breastfeeding.^[37]

Also, a descriptive study in Iran prioritized the information needs of people with or exposed to diabetes from the point of view of doctors and nurses. It was shown that the most important priority from the point of view of doctors was providing interventions whereas, from the point of view of nurse’s, it was education and lifestyle management.^[42]

Strengths and limitations of the study

The results of Delphi studies are based on individual and group opinions, and opinions vary depending on the composition of the panel.^[43] In our study, international experts were not used to reach a consensus because the authors believed that support needs may vary in different societies. Another limitation of this study is that diabetic pregnant women did not participate in the Delphi process. However, the items in the questionnaire were obtained based on a qualitative study conducted on these women. Nevertheless, it is recommended to use diabetic pregnant women and family members involved in their care in the Delphi process in future studies.

One strength of this study is that, our study was informed by both a qualitative study involving interviews with multidisciplinary specialists and diabetic pregnant mothers and a systematic review of reputable scientific databases. This added to the rigor of our study in gathering experts’ opinions by enriching the data. Also, we used different experts involved in the field of gestational diabetes in different cities of Iran in order to increase the generalizability of the study.

Conclusion

In our study, the priorities of psychosocial support for diabetic pregnant women to be included in care and treatment programs were as follows: paying attention

to and identifying the mother's worries and anxiety; husband and family support for diabetic pregnant women; including specialized nutritional counseling services in the maternal care program; timely education of pregnant women about diabetes and its complications; and proper nutrition education for diabetic mothers. Identifying and prioritizing psychosocial support needs can be the first step in designing and providing effective and qualified services at all levels of health care.

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Conflicts of interest

Nothing to declare.

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