Scientific Foundation SPIROSKI, Skopje, Republic of Macedonia
Open Access Macedonian Journal of Medical Sciences. 2022 Jan 03; 10(T8):180-187.
https://doi.org/10.3889/oamjms.2022.9500
eISSN: 1857-9655
Category: *T8 –"APHNI: Health Improvement Strategies Post Pandemic Covid-19"*
Section: *Gynecology and Obstetrics*

OPEN ACCESS

A Qualitative Study: Mothers' Experience in the Management of Gestational Diabetes Mellitus during and after Pregnancy in Yogyakarta, Indonesia

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Edited by: Ksenija Bogoeva-Kostovska
Citation: Subarto CB, Matsuzaki M, Estrade M, Sundemeir S, Hakimi M, Isnaeni Y, Hadi H, Kurniasari Y, Fatimah S, Yulyani L, Wijayanti I. A Qualitative Study: Mothers' Experience in the Management of Gestational Diabetes Mellitus during and after Pregnancy in Yogyakarta, Indonesia. Open-Access Maced J Med Sci. 2022 Jan 03; 10(T8):180-187. https://doi.org/10.3889/oamjms.2022.9500
Keywords: Gestational Diabetes; Pregnancy; Post-Partum; Social Support; Qualitative Research
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Received: 13-Oct-2021
Revised: 21-Nov-2021
Accepted: 02-Dec-2021

Funding: This research did not receive any financial support
Competing Interest: The authors have declared that no competing interest exists

Abstract

BACKGROUND: Gestational diabetes mellitus (GDM) incidence is related to maternal and child health risks, such as pre-eclampsia, premature births, and the development of type 2 diabetes at 5–10 years after pregnancy. The adaptation process of women with GDM is complicated and requires a series of treatments and behavior changes over a short period. The psychological support of families and health-care professionals is indispensable in achieving GDM management success.

AIM: This research aimed to explore Indonesian mothers' experiences in GDM management and support during and after pregnancy.

METHODS: The design of research implemented qualitative approaches, phenomenology, and the homogenous purposive technique to recruit 12 participants. In-depth interviews were carried out with each participant using face to face. Interviews were recorded, verbatim transcribed, and analyzed thematically by Collaizi.

RESULTS: Five themes emerged: Responses to GDM diagnosis; GDM management during pregnancy; obstacles in GDM management; support for GDM management; and postnatal self-management. Adherence to diet and exercise recommendations is difficult for some participants, although they have a good understanding of GDM. Feeling the fetus's movement of and surrendering to God become forms of psychological support and motivation in the management of gestational diabetes mellitus.

CONCLUSION: The barriers and facilitators for GDM management identified here are multidimensional and may help facilitate health workers to more effectively support women with GDM in overcoming the perceived obstacles so that they can still feel a safe and comfortable during pregnancy with minimum risk.

Introduction

Gestational diabetes mellitus (GDM) is defined as a degree of glucose intolerance with first recognition during pregnancy [1]. GDM is estimated to affect around 1.4–12.3% of all pregnancies and is generally detected at 24–28 weeks of gestation [2]. The prevalence of GDM ranges from 1% to 14% worldwide [3], while the prevalence of GDM in Indonesia in 2007 (based on O'Sullivan's diagnostic criteria) was 1.9–3.6% [4]. This difference in prevalence can be due to population characteristics such as race, ethnicity [5], use of health services, screening strategies (universal and selective) [3], and diagnostic criteria [6]. GDM is associated with adverse health outcomes in the short and long term, such as an increased risk of developing premature birth, macrosomia, cardiovascular disorders, or type II diabetes later in life among women and their offspring [7].

Management of diabetes in pregnancy should be implemented as an integrated approach to reduce maternal and perinatal morbidity and mortality [4]. Early management of gestational diabetes mellitus includes glucose monitoring and lifestyle modification. If glycemic goals are not achieved by lifestyle intervention, pharmacological therapy (metformin, glyburide, and tau insulin) should be given immediately [8]. As many as, 70–85% of pregnant women with GDM can control glycemic targets with lifestyle modifications, including diet and physical activity. However, 15–35% of mothers with GDM require insulin therapy [9].

Psychological support from family and health workers is needed to achieve successful GDM management [10]. The previous research has found that pregnant women with GDM have feelings of shock, sadness, fear, and even guilt toward themselves for not being able to maintain their health when diagnosed with GDM [11]. Maintaining a proper diet, engaging in regular physical activity, as well as regular self-monitoring, are all key to achieving optimal glycemic levels [11]. Although most pregnant women with GDM will achieve normal blood sugar levels after childbirth, they have a 10-fold risk of developing type 2 diabetes in the future compared to those with normoglycemic pregnancies [12].

Many studies in Indonesia discuss diabetes mellitus in general, but few studies have explored GDM. In this article, we present a study to explore women's experiences of managing GDM during and after pregnancy. The findings from this study will help inform health-care providers to be able to improve GDM services and support women to achieve optimal glycemic control so that women with GDM can experience safer, more comfortable pregnancies with fewer risks.

Methods

Study design

This was a qualitative research study in which in-depth interviews were conducted to explore women's experiences of obtaining support, as well as obstacles in undergoing GDM treatment. Recruitment of participants was conducted using a homogeneous purposive sampling strategy. The recruitment of participants was also assisted by midwives and cadres. Potential participants were given an invitation letter study information sheet. This research was conducted in three *Puskesmas* (Primary Health Center) in Yogyakarta City, which were *Puskesmas* Umbulharjo 1, *Puskesmas* Danurejan 1, and *Puskesmas* Kotagede II.

Participants

The inclusion criteria of main participants were women with a history of GDM within a maximum of 2 years, age >18 years, still having Buku KIA (Kesehatan Ibu dan Anak) and living in Yogyakarta City. Buku KIA is a book containing knowledge for pregnant women and follow-up on maternal and child health. The limit of 2 years post-GDM was used to minimize issues recalling the experience of GDM. Deaf women were not included because this study used an oral interview process. The recruitment of participants was assisted by midwives and cadres. Potential participants were given an invitation letter and study information sheet. In total, there were nine mothers who met the inclusion criteria and showed interest in the study. Among the potential participants, two declined to participate at this stage on the grounds that they were too busy taking care of the household. All participants undertook cesarean section, partially because of the diagnosis of GDM but also because of other health complications such as a history of cesarean section <2 years, hypertension, premature rupture of membranes or lack of mobilization due to muscle rigidity. It is in accordance with the Gasho Research which states that GDM is a single indication for performing cesarean section [14]. Several key stakeholders also agreed to be interviewed for the study, including three midwives, one general practitioner, and one nutritionist. Stakeholder participants were selected based on their experience with GDM patients at Primary Health Care. The head of the Primary Health Care recommended them because of their experience in this area. At the end of the study, all participants were given an incentive of Rp. 70,000 as a thank you for participating.

Data collection

We asked participants several questions related to factors contributing to increased risk of GDM. Previous research [15] has found that women who have a family history of DM have a 3.3 times greater risk of experiencing GDM than those without a family history of DM. In addition, the World Health Organization (WHO) lists history of GDM in a previous pregnancy as a risk factor for recurrent GDM [16]. Some of the questions asked were carried out by in-depth interviews with a duration of 30. The location of the interview was selected based upon the participants' preference. Data were collected using an interview guide (see Table 1). None of the participants withdrew. The interview process was assisted by an audio recorder and field notes.

Table 1: Interview guide

Main participants	Support participant
1. How did you respond when you found out for the first time you have GDM? 2. Can you tell me about your experience with GDM during pregnancy and after giving birth? 3. How do you achieve optimal glycemic control? 4. What makes it difficult for you to achieve optimal glycemic control during pregnancy and after childbirth? 5. What makes it easier for you to achieve optimal glycemic control during pregnancy and after childbirth? 6. What message would you like to convey to pregnant women who are experiencing GDM?	1. How is gestational diabetes mellitus screening at *Puskesmas* (Primary Health Center)? 2. What forms of support do health workers provide in handling GDM cases? 3. Are there any obstacles in providing services in GDM cases? 4. What is long-term monitoring for patients with a history of GDM?

Data analysis

The data were analyzed using thematic analysis by Collaizi. The familiarization of the data was performed by the researcher by listening to and reading back the verbatim results. Verbatim uses Indonesian,

then we translate it into English which is assisted by a translation agency. Words or sentences in verbatim relating to women's experiences in achieving glycemic control were used. The meaning of each selected sentence was identified and coded into subthemes and themes. The final step was member checking, to describe the reporting and validate the research results to participants. Validation of research results to participants could not be conducted face to face because it coincided with the COVID-19 pandemic restrictions, so it was conducted by telephone.

Trustworthiness

The research team consulted with various experts in the field of GDM to ensure that the interview questions were appropriate. Expert judgments are from PhD Obstetrics and Gynecology Specialists and senior midwives with the scope of GDM research.

Ethical consideration

That ethics committee approval was obtained from Ethical Commission of Universitas 'Aisyiyah Yogyakarta Number 967/KEP-UNISA/XII/2019.

Results

The age range of the women in this study was 28–40 years. It shows that GDM is not only experienced by pregnant women with a risky age (≥35 years) but also experienced by healthy reproductive ages of 25–35 years. The American Diabetes Association recommends that age ≥25 years is used as the threshold for screening and monitoring of GDM because maternal age ≥25 years is the most predictive factor for GDM [13]. Table 2 shows the characteristics of the participants.

Table 2: Main participant characteristics

Participants characteristics	P 1	P2	P3	P4	P5	P6	P7
Age	34	29	40	32	30	40	28
Parity	3	1	4	2	1	1	2
Miscarriage	2	-	1	1	1	-	-
History of DM	Yes	No	Yes	Yes	Yes	Yes	Yes
History of having recurrent GDM	Yes	No	Yes	Yes	No	No	Yes
BMI before pregnancy	23.3	20.83	25.6	26.6	29.2	23.3	28
Weight gain (kg)	15	10	12	2	15	10	18
Type of labor	SC	SC	SC	SC	SC	SC	SC
Gestational age (weeks)	36	33	32	34	37	35	35
Birth weight (g)	3930	2200	2900	4150	3570	3620	4600

DM: Diabetes Mellitus; GDM: Gestational Diabetes Mellitus; BMI: Body Mass Index; CS: cesarean section

Family history of DM (85.7%) and GDM history (57%) contributes to a high risk of experiencing GDM. The previous research [14] has found that women who have a family history of DM have a risk of experiencing GDM 3.3 times greater than those without a family history of DM. Meanwhile, the World Health Organization (WHO) said that a history of GDM in a previous pregnancy is also a risk factor for recurrent GDM [15]. Cesarean section experienced by all participants was conducted not purely because of the diagnosis of GDM, but due to other health complications experienced by the participants, such as a history of cesarean section <2 years, hypertension, premature rupture of membranes, or lack of mobilization due to muscle rigidity. It is in accordance with the Gasho Research which states that GDM is a single indication for performing cesarean section [16]. There are five themes: Responses to GDM diagnosis: GDM management during pregnancy, obstacles in GDM management, supports for GDM management, and postnatal self-management.

Responses to GDM Diagnosis

Each participant had a difference in acceptance of the GDM diagnosis. Some of them felt anxious and afraid because of their concern about their health condition and the health of their fetus, especially for those who had other comorbidities or were pregnant for the 1st time. Participants who had a family history of DM or previous GDM diagnosis expressed less concern.

> *"Anxious, afraid because the glucose is so high, more than 300"* (P3)
> *"I was shocked. The DM was high and the blood pressure was high too"* (P6)
> *"At first, I was crying and afraid because I was carrying a fetus. I couldn't sleep. I have been waiting for this pregnancy for 3 years"* (P5)
> *"I was anxious for my first GDM pregnancy. I felt very anxious. Then, in my second GDM pregnancy, I feel comfortable"* (P7)

The diagnosis of GDM is described as a "learning moment," where the diagnosis of GDM can motivate women to change their behavior into healthy living behavior according to their health conditions. Most of them took the initiative to find information on the internet such as the experience of women with GDM both during pregnancy and how the process of giving birth. With the hope of reducing anxiety

> *"I immediately browsed through the internet, what pregnant people with GDM should do, read lots of articles as well as asked many people who have experienced it"* (P4)
> *"read on the internet and think back to my first GDM pregnancy, because this is my second GDM pregnancy"* (P1)

GDM management during pregnancy

Diet

Participants discussed a variety of diet strategies to manage GDM. For example, brown rice

was substituted in place of white rice because of the lower glycemic index. Participants described snacking habits to deal with frequent feelings of thirst and hunger. The types of snacks for each participant also varied from vegetables, fruit, to light snacks containing carbohydrates

> *"I don't eat sweet food. I have also consumed brown rice. When I consume brown rice, the frequency of eating is 5-6 times a day. Maybe because the sugar content is low, so I quickly feel hungry. Thus, I replaced it with white rice again"* (P1)
> *"I reduce the portion of rice and eat more vegetables. I also limit packaged drinks" (*P2)
> *"My favorite snack is fried potatoes or chips. Sometimes, my husband provides biscuits and fruit"* (P4)

Meanwhile, when attending an outdoor event with a variety of food dishes, each participant has their own way of applying their diet.

> *"Eat as usual. I injected insulin first and then ate. If the others eat 1 portion, I only have 1/4 portion"* (P1)
> *"Eat as usual. I don't limit my eating"* (P3)
> *"I bring my own lunch. Even though other people eat delicious food and buy burgers, I am not interested"* (P5)

There is one participant who follows a strict diet because they do not want to receive insulin. The following is an excerpt from the participant's statement:

> *"When I was diagnosed with GDM, I was asked to get insulin therapy, but I was not interested. I tried to adjust the diet first. I avoided sweet foods, especially sugar. Rice should also be brown rice. Even if the rice was white, a maximum was 3 spoons. I also changed the milk. Initially, the milk of pregnant women was replaced with UHT milk which had no taste. I also often consumed boiled food"* (P5)

In the end, all participants managed to achieve optimal blood sugar levels by doing a combination of diet and physical activity.

Physical activity

Physical activity is considered to help optimize blood sugar levels. Walking and household chores were described as the main sources of physical activity for most participants. One participant also participated in group exercise class for pregnant women and walked regularly.

> *"I do physical activities as usual, such as babysitting and doing house chores"* (P2)
> *"I never exercise. After waking up, I immediately do house cleaning. The activity is not finished yet, the kids are awake. So, there's no time for exercise. At most, I take a morning walk in front of the house, about half an hour"* (P7)
> *"At that time, I participated in pregnancy exercise and morning walks routine. The morning walk routine can be up to 1 km. Pregnancy exercise is usually done at Sadewa Hospital. Sometimes, the morning walks routinely around JEC 2-3 turns"* (P5)

All participants reported achieving optimal blood sugar levels by doing a combination of diet and physical activity during pregnancy.

Monitoring blood sugar levels

Most of the participants checked their blood sugar if they felt any symptoms of abnormal blood sugar, as opposed to checking at regular time intervals.

> *"When my health condition starts to decline or when I feel dizzy, I check my blood sugar. The time is uncertain to check blood sugar, sometimes once every 2 weeks and sometimes once a month. The point is, if there are complaints, just check"* (P1)
> *"I check blood sugar myself because I have a tools*" (P2)
> *"if the health condition decreases, the blood sugar is checked, whether high or low"* (P4)
> *"I went to the pharmacy. When using this (pointing to an insulin pen), I am brave. Although "I have a tool to check blood sugar, I don't dare to use it"* (P6)

Pharmacological therapy

Although participants' management of GDM during pregnancy generally included a non-pharmacological approach, such as dietary modification, exercise, and glucose monitoring, most also ended up utilizing a pharmacological aid to control blood sugar (metformin, glyburide, or insulin).

> *"I immediately took insulin when it was discovered that my sugar levels were high"* (P2)
> *"For sugar disease, I take metformin. For the condition of the pregnancy, I was given vitamins and hypertension medication. I have a history of hypertension"* (P3)
> *"After 4 weeks of being diagnosed with GDM, the doctor gave me insulin"* (P4)
> *"During pregnancy, I took metformin. However, when the gestational age got bigger, it was replaced with insulin"* (P6)

However, one participant refused insulin due to negative past experiences administering insulin injections to her father.

> *"So, I did all the doctor's advice, except insulin therapy. I seem traumatized because I've*

seen my father who has diabetes and has to inject insulin almost every day and it was me who did the insulin injection. Do I have to get insulin too? Although insulin is not dangerous and if people have a diabetes it is better to get insulin. Then, I don't use insulin at all" (P5*)*

Supports for GDM management

Support is needed to anticipate obstacles that arise. Psychological support is obtained from health workers and family members. Physical support is also obtained from the family through help preparing food and giving insulin injections.

.. The doctor said that I don't have to think about the DM. The point is to focus on having children, the doctor said that you are lucky because not everyone can be healthy until now… Then, when I asked about diet, he said that I don't need to diet, the point is to eat lots of protein and reduce carbohydrates and sweetness" (P6)

… I depend on my husband. When I want to eat, my husband comes to give me an injection. He is very strict so I am excited too, so that my son can survive. Alhamdulillah it can last until now" (P1)

"Family members understand, everyone is supportive. The problem is that there has been a bitter experience in fact. In the past, my mother had kidney failure and my father had diabetes too" (P5)

Participants' spirituality provided an inner source of motivation, illustrated in the following quotes:

*"*Yes. I make my mind enjoy as long as our thoughts are positive, whatever the pain, *InsyaAllah* we can*"* (P4)

*"*When I was pregnant, I surrendered to God. Strong effort and strong prayer. Self-motivation is also needed. We want to lose or we want to win from our illness. so what I eat is best for my fetus*"* (P5)

Postnatal self-management

In general, participants described a healthier postpartum lifestyle compared to pre-pregnancy because of their experience with GDM. After giving birth, some participants stopped monitoring their blood sugar levels because they had returned to normal. However, some participants still experienced symptoms of abnormal blood sugar.

"Now, I'm not on a diet. My body's response has automatically been to limit food. If overeating recurs" (P6)

"The last check yesterday was 117. Then, for this month, because my diet is not disciplined, so my fasting blood sugar is 267 or around 260 (P1)

"But, honestly, after I got pregnant, I was able to control myself. Ooh, I have just eaten this, that's why my body doesn't feel good. Thus, I respect the body more. I prefer to walk, so now I do fast Monday Thursday, so that my body is healthier" (P5)

According to the midwives and nutrition officers at the *Puskesmas* (Primary Health Center), there is no special monitoring for mothers with a history of GDM, but they are still given dietary education from nutritionists.

"If after giving birth, we ask about the history of the birth whether the sugar is stable or not. For GDM, after delivery, it is usually normal. But we still educate on nutrition. That's the nutritionist" (midwife)

"For GDM, it's normal after giving birth. But we still provide PHBS education, provide motivation, don't get chronic DM" (midwife)

"After giving birth, keep eating with a balanced menu, consume with side dishes that we like and are diverse and most importantly healthy. For example, eating rice and vegetables soup, it doesn't have much variety yet. Thus, for example rice/substitutes, vegetables, side dishes, and fruit. Like that" (nutritionist)

Discussion

Pregnancy complications like GDM can be a psychological burden on pregnant women. Participants in this study explained that they felt shocked, afraid, and anxious about their health condition and fetal health, especially for those who had not had children or who had other comorbidities such as hypertension which could worsen their health and psychological conditions. The experiences of the participants in this study are corroborated by research conducted in the UK which explains that mothers with GDM find it difficult to accept their diagnosis and are in a rejection phase, and find it difficult to understand the education provided by health workers [17].

The concept of a health belief model indicates that a person who feels vulnerable and severely ill health can possess the power to take action and engage in healthy behavior (36). As observed in this study, some participants began to adapt to their diagnosis by looking for more information on the internet about GDM and trying to have a healthy lifestyle according to the recommendations of health workers. Management of GDM during pregnancy generally begins with a non-pharmacological approach, such as dietary modification, exercise, and glucose monitoring. If glycemic goals are

not achieved with this intervention, pharmacological therapy (metformin, glyburide, or insulin) should be given immediately [8]. *The National Institute of Child Health and Human Development* recommends that women with GDM eat at least three small-to-medium meals a day and snack on 2–4 times per day [18]. This was implemented by several participants who had a variety of foods and snacks ranging from vegetables, fruit, unsweetened fruit juices, and biscuits. The type of snack consumed differed among women, possibly due to different socioeconomic conditions. According to the previous research [19], the price of healthy food can be a barrier to adopt a healthy diet, especially among individuals of lower socioeconomic status.

According to the *American Diabetes Association* (ADA), women with diabetes or GDM are allowed to eat candy, chocolate, or other sugary foods as long as they are eaten as part of a healthy eating plan or in combination with proper exercise. In addition, mothers with GDM need to know how to read nutrition labels on food packaging that can make it easier to control diet and blood sugar levels [20]. ADA and *American College of Obstetricians and Gynecologists* (ACOG) also recommend exercise for GDM women. ACOG stated that physical activity in pregnancy benefits most women and poses a small risk to pregnancy. Exercise and physical activity increase the ability of the body to burn sugar and increase insulin sensitivity, which, in turn, can keep blood sugar levels within the normal range [21]. This is in accordance with Hidayati's research that there are differences in blood sugar levels in the group that does physical activity with the group that does less physical activity, although the Chi-square results do not show a significant difference [22].

The results of this study indicate that the participants have received education about physical activity, but due to the limited time they have, most of them do not exercise regularly. Most of the participants believed that doing household chores and caring for children were considered exercise. However, adequacy of physical activity should be based on the principles of FITT (frequency, intensity, type, and time), which is 30 min of exercise with moderate intensity and done almost every day so that the total estimate is 150 min a week [23]. Regular exercise of 30 min with moderate intensity at least 5 days a week can control blood sugar levels [24]. This is in accordance with Astuti's research that there is no significant relationship between the level of knowledge and the respondent's compliance in undergoing a type 2 DM diet, this is due to the length of time respondents are undergoing DM therapy. With a long enough time, respondents will often be given socialization by nurses, especially about DM therapy, and this can affect their level of knowledge, besides the level of education affects a person's capability in obtaining information [25], [26].

According to Hayashi *et al*., the habit of walking has become a popular exercise among pregnant women because apart from being easy to do, walking has a lower intensity and higher accessibility. In addition, walking is also an effective physical activity to control blood glucose levels [27]. Other exercises recommended by ACOG for mothers with GDM besides walking are swimming, static cycling, low-risk light aerobics, modified yoga (avoiding positions that reduce venous return), modified Pilates, and resistance band. Jogging and strength training are also possible, but should be consulted with an obstetric care provider. During exercise, pregnant women should avoid excessive fatigue, exercising in hot temperatures, and activities that can cause an impact on the abdomen or allow loss of balance and exercise excessively [9].

Research by Shepherd *et al*. explained that separate diet and exercise interventions for the prevention of GDM or type 2 diabetes have been widely assessed for their effectiveness. The combination of diet and exercise has a positive impact on diabetes risk factors and incidence. In addition, it minimizes the risk of excessive weight gain during pregnancy [28]. Monitoring of blood glucose levels is also necessary to confirm that glycemic control has been established as a GDM intervention. The general recommendation of monitoring blood glucose levels is 4 times a day, once after fasting (waking up in the morning) and 3 times at each meal [1]. Pharmacological treatment is recommended when target glucose levels cannot be consistently achieved through nutritional therapy and exercise. The results of this study indicate that six participants received insulin therapy and two of them had started taking metformin. In accordance with the research of Hyer *et al*., taking metformin in pregnancy with GDM does not increase congenital disorders with serious complications. Metformin is shown to reduce maternal weight gain compared to insulin, so metformin may be the preferred choice if glucose targets are not met by dietary measures [29]. In contrast, the ADA stated that insulin is the first line of treatment for GDM, whereas metformin and glyburide should not be used as first-line treatments in GDM patients because they cross the placenta to the fetus. The type of insulin, the timing of administration, and the frequency should be adjusted according to the patient's needs based on his blood sugar levels. Insulin therapy is considered safe and effective in maintaining glycemic control and is still considered to be the first pharmacotherapy used by health professionals to intervene in GDM mothers [30].

Self-confidence in pregnant women with health complications like GDM is needed. One participant in this study managed to control her blood sugar levels only through diet and physical activity, without receiving insulin therapy. The self-confidence dimension of the Health Belief Model theory also shows that people who have self-efficacy (self-confidence) will be able to use their potential optimally, which are the ability to feel, think, motivate themselves, and behave to maintain their health. Psychosocial well-being such as support

and self-efficacy is an important factor associated with adherence to a healthy lifestyle. Moreover, psychological well-being has an effect on positive changes in diet and physical activity. Psychosocial vulnerability (depression, stress, and lack of social support) can have a negative impact on birth outcomes, such as cesarean section, macrosomia, hypoglycemia, and other adverse maternal outcomes during the postpartum period [31].

Family members, relatives, or coworkers are also believed to have an influence on adherence to diet and physical activities guidelines among women with GDM [32]. In this study, participants stated that husband's support had an important role in helping GDM mothers in maintaining a healthy lifestyle and assisting in providing insulin injections. In accordance with the with Gilbert's finding that family support, especially husband, is needed in undergoing GDM therapy. Furthermore, social support from friends and family also has a significant relationship with the selection of better food quality [31]. Motivation from the fetus and through prayer is forms of support for participants in applying the maximum effort to manage GDM. According to Attum *et al*., Muslim patients believe that illness, suffering, pain, and death are tests from God and consider illness as a trial in which one's sins are washed away so that whatever the conditions are all return to God [33]. The experiences and obstacles described in this study are multidimensional and may help facilitate health workers in more effectively supporting and educating women with GDM. In doing so, women can experience a safe and comfortable pregnancy with minimal risk.

Conclusion

GDM is a very difficult experience for many people. New lifestyle adaptations are necessary to manage GDM, including making peace your diagnosis and making new behavior changes for healthy living. Diet and physical activity are the main part of self-monitoring GDM. Lack of adherence to diet and physical activity recommendations is a major obstacle in GDM management, stemming from a lack of GDM education, and social support. These barriers may contribute further to poor blood glucose control. Praying and feeling the movements of the fetus can increase the participants' motivation to be able to maintain their health. Self-efficacy could increase confidence to carry out appropriate health behaviors, which is bolstered by social support from family and friends, especially from husbands.

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