

Systematic Literature Review: Adaptation and Psychological Changes of Pregnant Women with Diagnosis Gestational Diabetes Mellitus

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<https://doi.org/10.30787/gaster.v19i2.714>

ARTICLE INFO

Keywords: *diabetes mellitus gestasiona; pregnancy; psychology; adaptation*

ABSTRACT

Gestational diabetes mellitus (GDM) accounts for 3-25% of all pregnancies in the world. The diagnosis of GDM in pregnant women has physical as well as psychological effects that can be considered for planning a healthy lifestyle promotion strategy that is the first line of treatment. The aim was to examine the literature on the adaptation and psychological changes of pregnant women with the diagnosis of GDM. The method uses a focus step review, the PEOS framework, identifies relevant studies from Pubmed and Proquest 2015-2019, filtering data with PRISMA Flowchart, assessing the quality of studies using CAPS. Results: From 929 articles, 13 articles indexed by Scopus Q1 and Q2 were analyzed. Thematic analysis obtained results from adjusting the diagnosis of GDM through stages of distress and fear, realizing the necessary changes, learning to manage GDM, finding motivation and compliance, feeling various psychological impacts, some consider it a call to make lifestyle changes during pregnancy. Conclusion: adaptation of pregnant women to the diagnosis of GDM, changes in attitude and anxiety from time to time, ultimately leading to acceptance of the condition and the best management. The psychological changes of the mother with a diagnosis of GDM find it difficult to come to terms with her condition, partly as a call to make lifestyle changes during pregnancy.

INTRODUCTION

GDM, which is commonly called diabetes in pregnancy, occurs in 3-25% of pregnancies

worldwide (Melchior *et al.*, 2017). In general, after childbirth, the risk increases sevenfold within 5-16 years of developing type II

diabetes mellitus (Pirkola *et al.*, 2015). The risk for contracting T2DM is ten times higher in the period of 10 years (Herath *et al.*, 2017).

Many pregnant women do not change their lifestyle to a healthy lifestyle after being diagnosed with GDM, which can increase the risk of developing type II diabetes. Many factors hinder a healthy lifestyle in pregnant women with GDM, with recommendations emphasized about the psychological well-being of pregnant women with GDM should be considered when planning strategies to promote a healthy lifestyle. (Dennison *et al.*, 2018).

Midwives have an important role in screening and managing GDM in terms of lifestyle counseling such as exercise, diet and nutrition and taking diabetes medications if needed. Lifestyle changes are the first line of

treatment. If inadequate then pharmacological therapy is given to keep blood glucose targets within acceptable levels (Patience *et al.*, 2019). The purpose of this systematic literature review is to examine, understand and conclude the literature on the adaptation and psychological changes of pregnant women with the diagnosis of GDM.

METHODS AND MATERIALS

This study uses a systematic literature review technique with steps, determining the focus of the review, guided by the question “How is the adaptation and psychological changes of the mother with a diagnosis of GDM?”. Furthermore, compiling the PEOS Framework with the focus of finding articles is qualitative research.

Table1. Framework PEOS

Population and their problems	Exposure	Outcomes or Themes	Study Design
Women Maternal Mother Mothers	Gestational diabetes mellitus Gestational Diabetes	Experience Knowledge Concerns Needs Antenatal care Early detection Quality of life	qualitative study

The next step, identifying relevant studies. The article search strategy was developed using several data. The data base used is Proquest and Pubmed by adjusting

the filters on the page such as full text, 5 years, human filtering. Next, the data filtering process uses PRISMA flowchart. The data were filtered according to the criteria that the

researcher specified. Researchers conducted a critical appraisal study of the literature that had been eliminated from the inclusion criteria. Assessment of study quality using Critical Appraisal Skills Program (CASP) 10 question to help you make sense of a qualitative research.

RESULTS AND DISCUSSION.

RESULTS

The results of the data filtering stage using PRISMA flowchart are as follows:

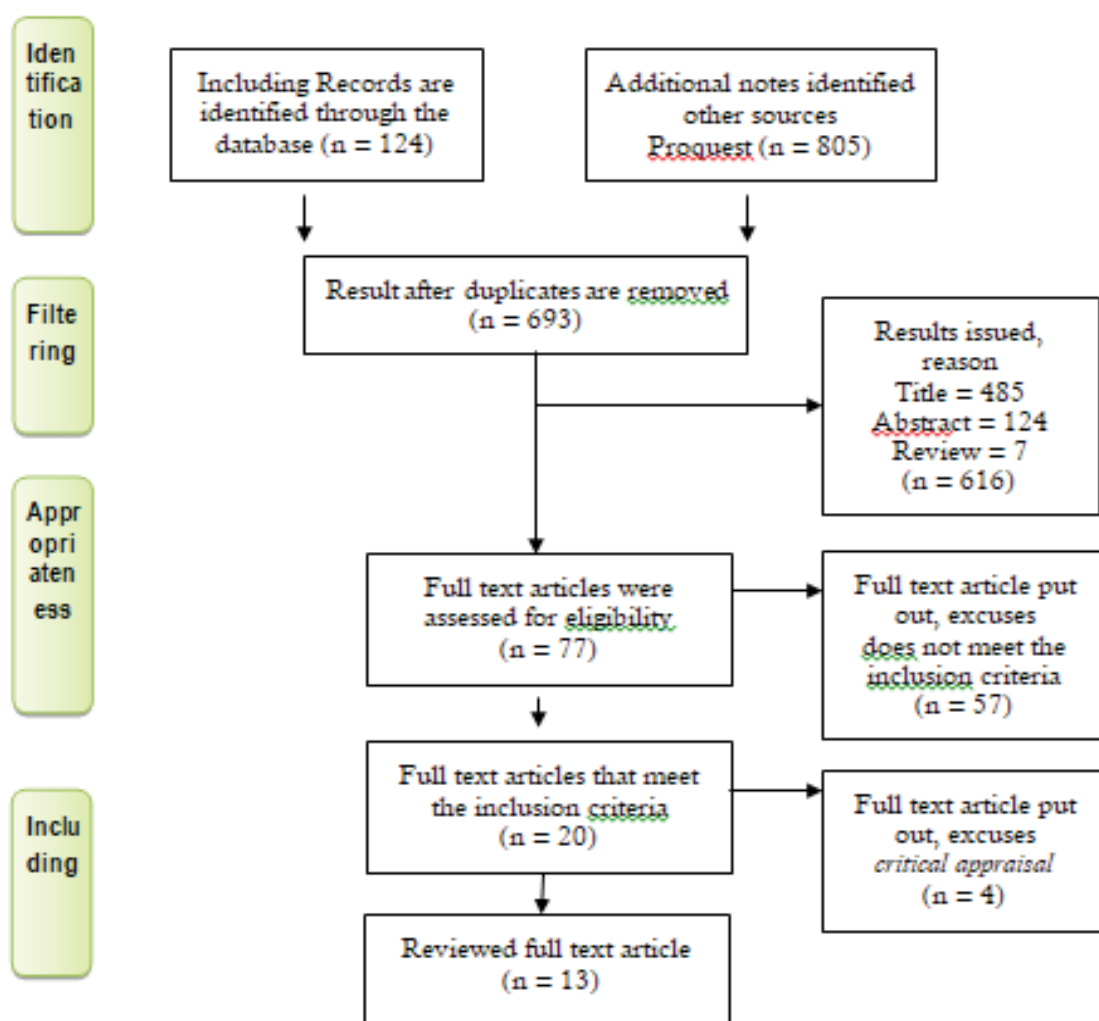


Figure 1. PRISMA Flowchart

Table 2. Data Extraction

No	Title / Author / Year / Journal Ranking	Country	Research purposes	Types of research	Types of Data Collection	Population and Sample
1	<i>Postnatal gestational diabetes mellitus follow-up: Australian women's Experiences</i> (Kilgour et al., 2015) <i>Q1</i>	Australia	To explore and assess the communication experiences of GDM women from postnatal follow-up	Qualitative Studies	In-depth interviews between twelve and sixteen weeks after birth	13 Women diagnosed with GDM at the main tertiary referral hospital in Queensland, Australia, between December 2012 and July 2013.
2	<i>Reasons for women's non-participation in follow-up screening after gestational diabetes</i> (Hyldgaard et al., 2015) <i>Q1</i>	Denmark	To understand women's experiences with medication and care during pregnancy and to understand how experiences influence participation in follow-up screening	Qualitative Studies	Semi-structured interview	Seven women treated for gestational diabetes at a university hospital in northern Denmark on 1 June 2012 and 1 June 2013 had given birth between one and two years earlier.
3	<i>Exploring the needs, concerns and knowledge of women diagnosed with gestational diabetes: A qualitative study</i> (Draffin et al., 2016) <i>Q1</i>	English	To explore concerns, needs and knowledge of women with a diagnosis of GDM	Qualitative Studies	<i>Focus Group Discussion</i>	19 women took part in five focus groups, aged 18-45 years and currently pregnant with GDM, or with a history of GDM (up to 12 months postnatal) between February and July 2012
4	<i>'Is gestational diabetes a severe illness?' exploring beliefs and self-care behaviour among women with gestational diabetes living in a rural area of the south east of China</i> (Ge et al., 2016) <i>Q2</i>	Cina, Tiongkok	To explore beliefs about disease, health behaviors and self-care among women with gestational diabetes living in rural areas of south eastern China	Qualitative Studies	semi structured interview	Seventeen women of gestational age 34-38 weeks with gestational diabetes criteria inclusion was age ≥ 16 years, diagnosis of GDM, 34 - 38 weeks of gestation, between April and July 2013
5	<i>Lived Experiences of Women with Co-existing BMI ≥ 30 and Gestational Diabetes Mellitus</i> (Jarvie, 2016) <i>Q1</i>	English	To explore the life experiences of women with obesity (BMI ≥ 30) and Gestational Diabetes Mellitus (GDM) during pregnancy and the puerperium	Qualitative Studies	In-depth interviews, three interviews (two during pregnancy and one postpartum)	27 women with BMI ≥ 30 and GDM. Participants who are predominantly from low socio-economic status. The field research took place from 2011-2012

No	Title / Author / Year / Journal Ranking	Country	Research purposes	Types of research	Types of Data Collection	Population and Sample
6	<i>Going up, going down: the experience, control and management of gestational diabetes mellitus among Southeast Asian migrant women living in urban Australia</i> (A et al., 2016) Q1	Australia	To explore the experiences and management of GDM of Southeast Asian immigrant women	Qualitative Studies	Deep interview	Pregnant women with a diagnosis of GDM were recruited from antenatal clinics at two Sydney metropolitan hospitals. Nineteen women were interviewed
7	<i>The experience of gestational diabetes mellitus (GDM) among Hispanic women in a U.S. border region</i> (Carolan-olah et al., 2016) Q2	United States of America	to explore the experiences of women of Hispanic origin from Mexico with gestational diabetes mellitus (GDM)	Qualitative Studies	Semi-structured interview on one occasion	Participants 18 pregnant women with pregnant inclusion criteria, diagnosis of GDM, Hispanic women from Mexico and living in El Paso, gestational age at interview varied from 25 to 34 weeks, had some experience managing and management of diabetes at least 3 weeks.
8	<i>Postnatal experiences, knowledge and perceptions of women with gestational diabetes</i> (Eades et al., 2018) Q1	Scotland	To explore experiences, knowledge and perceptions of women with GDM to inform the design of interventions to prevent or delay type 2 diabetes	Qualitative Studies	Semi-structured interview	16 women with GDM were recruited from a clinic in Scotland. are eligible if they are 18 years of age or older. Convenience sampling approach. between January 2015 and August 2017
9	<i>Healthcare Experiences of Low-Income Women with Prior Gestational Diabetes</i> (Oza et al., 2018) Q1	Ohio	To describe the health care experiences of a diverse income sample of women with prior GDM, including suggestions for improving care	Qualitative Studies	Focus group discussion, consisting of twelve focus groups	28 Women, aged 18-45 years, and with a diagnosis of GDM in the last 10 years
10	<i>Experiences of gestational diabetes and gestational diabetes care: a focus group and interview study</i> (Parsons et al., 2018) Q1	English	To explore the GDM experience and GDM care for a group of women attending a large diabetes pregnancy unit in southeast London, UK, to improve care	Qualitative Studies	Semi-structured interviews and Focus group discussions	15 women with a diagnosis of GDM in the last 5 years, those aged ≥ 18 years, are able speaks and understands English and has a BMI of ≥ 25 kg. Held in 2015

No	Title / Author / Year / Journal Ranking	Country	Research purposes	Types of research	Types of Data Collection	Population and Sample
11	<i>Understanding the Experiences of East African Immigrant Women with Gestational Diabetes Mellitus</i> (Siad <i>et al.</i> , 2018) Q2	Canada	To document the impact of GDM diagnosis and perceptions of diabetes care among immigrant women	Qualitative Studies	Semi-structured in-depth interviews	10 EA female immigrants diagnosed with GDM, over 18 years of age living in Canada and immigrating from an EA who are eligible to participate
12	<i>A qualitative study of developing beliefs about health, illness and healthcare in migrant African women with gestational diabetes living in Sweden</i> (Hjelm <i>et al.</i> , 2018) Q1	Sweden	To explore development over time, during and after pregnancy, beliefs about health, illness and wellness, influence on self-care, care seeking information	Qualitative prospective Studies	semi-structured interviews on three different occasions: during pregnancy (gestational weeks 34 - 38), 3 and 14 months after delivery	Participants 9 pregnant women born in African countries and living in Sweden. Inclusion criteria were age <16 years, diagnosis of GDM
13	<i>Nursing management of gestational diabetes mellitus in Ghana: Perspectives of nurse-midwives and women</i> (Patience <i>et al.</i> , 2019) Q1	Ghana	to explore women's experiences regarding nursing management received after a diagnosis of GDM and nurse midwives' perceptions of GDM nursing management.	Qualitative Studies	Unstructured interview	Participants were 7 pregnant women diagnosed with GDM, 8 nurse midwives who provided GDM management services for a period of 6 months, namely December 2014 - May 2015

From the thematic analysis of 16 scientific articles about GDM, it can be described, **namely the meaning of GDM** is any level of glucose intolerance that starts from or first occurs during pregnancy (Kilgour *et al.*, 2015; Parsons *et al.*, 2018; Patience *et al.*, 2019). **The etiology of GDM**, namely the disruption of carbohydrate metabolism that occurs during pregnancy (Jirojwong *et al.*, 2016). In pregnant women with GDM, insulin resistance occurs in placental hormone reactions, this is in accordance

with observations of worsening GDM during pregnancy to delivery (Patience *et al.*, 2019). GDM is generally detected during screening between 26 and 28 weeks of gestation (Eades *et al.*, 2018).

GDM Risk Factors, namely history of GDM in previous pregnancies, history of labor with babies with large birth weight for gestation > 4500 grams, family history of suffering from type II diabetes, high maternal BMI before conception (BMI) \geq 30, maternal age 40 years, race/ethnicity ,

Indian subcontinent, Aboriginal, Torres Strait Islander, Pacific Islander, Maori, Middle East, non-white Africa), parity, hypertension and smoking status, history of polycystic ovary syndrome (Kilgour *et al.*, 2015; Jarvie, 2016; Hjelm *et al.*, 2018; Patience *et al.*, 2019).

Prognosis of GDM, include: in babies born, namely macrosomia, birth trauma and cesarean delivery, increased neonatal metabolic abnormalities, premature birth, hyperbilirubin, neonatal hypoglycemia, hypomagnesemia, congenital abnormalities, shoulder dystocia or birth injury, lung immaturity, cardiomyopathy, up to perinatal death. In mothers, that is a sevenfold future risk of developing type II diabetes within 5 years compared to pregnant women without GDM, hypertension during pregnancy, cesarean delivery, preeclampsia, polyhydramnios, leading to increased labor induction (operative labor, chorioamnionitis, tachysystole, uterine rupture, and bleeding, increased maternal mortality (Kilgour *et al.*, 2015; Hyldgaard *et al.*, 2015; Eades *et al.*, 2018; Oza *et al.*, 2018; Parsons *et al.*, 2018; Carolan-olah *et al.*, 2016; Hjelm *et al.*, 2018; Patience *et al.*, 2019).

There is no need for screening tests for women who have been diagnosed with DM before pregnancy occurs (pre-gestational diabetes meitus). The goal of GDM management is to optimize glycemic control with necessary self-care together

with advice on regular living, strict routines for blood glucose monitoring and exercise. Stress affects glucose control, resulting in hyperglycemia in addition to hormonal changes during pregnancy and blood sugar, which may further increase the risk of perinatal death and morbidity. (Carolan-olah *et al.*, 2016). Pregnant women with GDM are advised to change their diet, increase physical activity, monitor blood sugar and reduce stress (Jirojwong *et al.*, 2016; Eades *et al.*, 2018; Parsons *et al.*, 2018; Hjelm *et al.*, 2018). GDM can be adequately controlled with dietary modifications and increased physical activity (Ge *et al.*, 2016). To manage and improve the long-term health of mothers and babies (Oza *et al.*, 2018). When glycemic control in GDM pregnancy is improved, there are tremendous benefits for both mother and perinatal baby, namely normal delivery, normal weight during pregnancy, and reduced shoulder dystocia, fractures and nerve palsy in the baby. Midwives have an important role in screening and managing GDM in terms of lifestyle counseling such as exercise, diet and nutrition and taking diabetes medications if needed and adherence. As lifestyle moderation is the first line of treatment, pharmacological therapy should only be given if lifestyle moderation is not sufficient to maintain target blood glucose within an acceptable level (Patience *et al.*, 2019).

Screening for GDM is carried out by a midwife at a health center at 28 weeks of gestation or at 12 weeks of gestation, if there is a previous family history of DM or GDM. If proven positive, pregnant women are referred to a specialist who treats diabetes (Hjelm *et al.*, 2018).

Early detection of GDM in the postnatal period aims to identify pregnant women who are at great risk of experiencing type II diabetes. Furthermore, strategies to manage or reduce the risk of Type II diabetes are then offered for pregnant women (Kilgour *et al.*, 2015). According to recommendations from the National Institute of Clinical Excellence and the Danish Society of Obstetrics and Gynecology, the follow-up after GDM is screening for complications of gestational diabetes because of the level of diabetes risk. Follow-up screening is recommended three months after delivery, followed by annual or biennial screening (Hyldgaard *et al.*, 2015; Parsons *et al.*, 2018).

Adaptation of pregnant women with a diagnosis of GDM. Most pregnant women diagnosed with GDM face a steep learning curve when it comes to adapting to their diagnosis, such as blaming themselves and feeling guilty for the development of the condition, experiencing increased emotional anger, shock, anxiety and fear, blaming others for ethnicity, family history of GDM or type

II diabetes as the main cause. Although the majority did not realize that being overweight was a risk factor for GDM, some expressed anger at not being told to lose weight prior to conception by a healthcare professional. (Draffin *et al.*, 2016) (Parsons *et al.*, 2018). Many have no prior knowledge of GDM and their diagnosis results in feelings of worry and fear (Siad *et al.*, 2018). The transition between disease and health exists in the basic pattern of human life. Beliefs about disease and health are closely linked to beliefs about medicine and health-related behaviors, which are the central cognitive structures of any health care system. A recent metasynthesis suggests that pregnant women fear the diagnosis of GDM and the likelihood of Type II GDM over time, while others believe GDM is transient and are unaware of future risks (Ge *et al.*, 2016; Eades *et al.*, 2018). The representation of this disease is formed starting from identity (label or diagnosis of disease), cause (believed causative factor of disease), time line (expected duration of disease), consequence (expected effect of disease on physical, social and psychological well-being), control / medicine (the degree to which the disease can be controlled / cured), emotional representations (emotional response to illness) and coherence (how well a person understands their illness) (Eades *et al.*, 2018). Managing GDM is seen as an

additional burden for the role of pregnant women who are mothers, working, and managing the household (Siad *et al.*, 2018).

The ability of pregnant women to follow a healthy lifestyle is influenced by beliefs and is embedded in the context of socio-cultural life (Ge *et al.*, 2016). Diet suggestions that are not specific or individualized, are generally complex and difficult to adhere to. Some pregnant women from different ethnic backgrounds feel that time with a nutritionist is limited, not enough personally and that dietary advice is too ‘Westernized’. They expressed a desire to talk to someone who was more familiar with their cultural diet. Some pregnant women starve because they think that is the best way to control blood glucose levels (Draffin *et al.*, 2016).

Pregnant women from lower socio-economic levels tend to feel higher stress than those with higher socioeconomic conditions. The lifestyle changes required and frequent attendance at the antenatal clinic are heavy and exacerbate stressful life situations. Financial constraints affect the ability to purchase healthy foods and adhere to dietary recommendations (Jarvie, 2016). The diagnosis of GDM for Southeast Asian pregnant women is an unexpected disruption to their normal lifestyle coupled with demands for disease control. From the time of diagnosis, adds the need to monitor

and manage diet, exercise, and anxiety levels (Jirojwong *et al.*, 2016).

In terms of lifestyle interventions for behavior change, pregnant women feel the need for diet and physical activity advice. However, the health of the unborn baby facilitates and motivates behavior change during pregnancy which can be used to target attitudes and behavioral intentions (Eades *et al.*, 2018). There is empowerment where based on the desire to live a healthy life for themselves and their families, some pregnant women see GDM as an opportunity to change their lifestyle and take control of their lives. GDM is seen as a motivator for taking responsibility for personal health and for helping others (Siad *et al.*, 2018).

All pregnant women agree that monitoring blood glucose is time consuming and disrupts daily routines especially if working full time. Some pregnant women admit to lying or cheating when recording their blood glucose readings in the monitoring diary, this is due to self-denial of GDM and avoiding prescribed drugs, especially insulin. Many pregnant women feel like they are failing when they are told they need to manage the condition. Others also believe they now have life-long diabetes. However, after a period of ‘trial and error’ they were still able to meet the recommended blood glucose targets (Draffin *et al.*, 2016). Pregnant women understand that

insulin injections are needed and mean that their daily routine is interrupted by certain tasks needed to control the disease, including having to take a blood glucose test (sometimes two, three or four times a day) and record it in a book from a health professional. (Jirojwong *et al.*, 2016).

Changes in attitude and anxiety over time, ultimately leading to acceptance of the best conditions and management (Draffin *et al.*, 2016). adjustment to GDM through 5 stages, namely: distress and fear, realizing the necessary changes, learning to manage GDM, finding motivation and compliance even with limited understanding (Carolan-olah *et al.*, 2016).

Psychological changes in pregnant women with GDM. The anxiety felt by mothers with GDM is about the lack of opportunities to access information or to discuss and clarify perceived individual concerns. (Kilgour *et al.*, 2015). Pregnant women worry about not being able to live a normal life and are bound to lifestyle changes, especially diet, the development of diabetes and need insulin injections. Over time knowledge of the proper diet has improved, although no advice has been given by the clinic after delivery. Well-functioning health models with easy access but decreased follow-up routine over time not sure if they still have GDM and lack information on GDM

and diet (Hjelm *et al.*, 2018). Learning about the experiences of pregnant women with GDM can help to identify whether common beliefs and perceptions may be barriers (or facilitators) to behavior change, and to help ensure appropriate and appropriate interventions for pregnant women (Eades *et al.*, 2018).

DISCUSSIONS

The findings in SLR are in accordance with the results of other studies, that mothers with GDM are often troublesome, although most women are grateful for often getting support during pregnancy and feel appreciated when babies are born healthy and feel punished if mothers with GDM fail to control blood sugar levels so that it is. can have a detrimental impact on the psychological and physical health of mothers with GDM over the long term (Parsons *et al.*, 2018). There are some similarities and differences with the results of other studies where Thyroid condition is a risk factor for GDM (Giannakou *et al.*, 2019). Obesity prior to pregnancy is correlated with GDM (Pinheiro *et al.*, 2018). GDM can be predicted from obesity, aging and family health history (Svensson *et al.*, 2017). There has been a change from negative response to acceptance of a GDM diagnosis by attending group counseling with family, hearing from women who have experienced GDM, dietary

recommendations specially designed with cultural and financial considerations, getting glucose monitoring tools. free, there is free health transportation to health services, there is child care assistance when attending clinic appointments. As well as perceived obstacles, namely the lack of health information, teaching sessions, consultations, and food diaries in easy to understand language, long waiting times in health care clinics, seeing different health professionals at each clinic visit, inconsistent advice, no assessment adjusted physical activity, not knowing where to access appropriate information from the internet, partners, family, and unsupportive workplaces and unavailability of social media or support groups for women with GDM. The judgments felt by others cause some women to only share their GDM diagnosis with their partners resulting in closure through social interactions (Martis *et al.*, 2018).

The results of SLR adaptation and psychological changes in pregnant women with GDM are different from the results of other studies whose findings are broader that the perception of GDM is a family hereditary disease that cannot be avoided, and is helpless and has decreased mental health. Mothers with GDM experience life getting more complicated and losing freedom in life. For mothers with GDM, missing health service opportunities to detect and manage

GDM has a lasting health impact on the offspring. Positive relationships with health care providers facilitate GDM management and help mothers with GDM engage in self-management (Reid *et al.*, 2018).

Changes in life, hopelessness and lack of knowledge about GDM. Pregnant women with GDM are aware of the risk and high incidence and hope that it does not happen to them. Before being diagnosed, pregnant women do not feel any symptoms in their bodies, so they have to face major changes in their lives, changing their habits by learning quickly to control blood sugar levels. Awareness of disease takes time and endurance energy to deal with the stresses of each day. The longer pregnant women with GDM feel compelled to accept their situation by adopting a healthy lifestyle both for themselves, their familie and the community. Pregnant women with GDM are aware that they must be active if they want health for themselves and the babies they are carrying, propose recommendations to help overcome GDM.

Similar to the results of other studies, women with GDM are concerned about the diagnosis of gestational diabetes related to diet during pregnancy. Supporting factors for adherence to a healthy diet are the well-being of the baby and himself and reducing the risk of future disease. Family, friends and

social support is important. Meanwhile, the inhibiting factor is learning new things that take time to start (Mcparlin *et al.*, 2017). Other studies have found that adapting to a GDM diagnosis is initially worried about diabetes and blood tests, and trying to control it and be patient with the baby it is carrying. Other concerns include wondering about the impact of diabetes on the unborn baby, worrying about the mother's health and worrying about having a blood test. Mothers with GDM try to control diabetes by learning to check blood glucose levels, fear high blood sugar and be aware of what to eat. Be patient for the unborn baby by controlling food cravings, accepting pain in the fingertips and feeling satisfaction with the results of controlling blood sugar (Study *et al.*, 2016).

The findings from the results of other studies are in accordance with the SLRs mentioned above, where the adaptation and psychological changes of pregnant women are initially shocked when diagnosed with GDM, then they feel a lack of energy in the community by recommending that to health centers to consider hiring a dietitian and nutritionist (Youngwanichsetha *et al.*, 2016).

CONCLUSIONS AND SUGGESTIONS

Adaptation of pregnant women to the diagnosis of GDM, changes in attitude and anxiety from time to time, eventually leading

to acceptance of the best conditions and management, and adjustment through stages of distress and fear, realizing the necessary changes, learning to manage GDM, finding motivation and compliance even with limited understanding.

Maternal psychological changes with GDM, pregnant women after getting information about abnormal examinations, feel the subjective impact of anger, shock, disappointment, fear, feeling like crying, trusting, being shocked and having difficulty reconciling when told about the results of the mother's test with a diagnosis of GDM. Some know the risk of future diabetes and think positively as a call to make lifestyle changes during pregnancy.

It is necessary to conduct research on the experiences of pregnant women with the diagnosis of GDM so that it can be used as the basis for providing health education by health workers, especially midwives as the first line of GDM management.

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