

Gestational diabetes and its impacts on pregnancy, childbirth and puerperium



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ABSTRACT

Gestational diabetes is a significant concern for women during the gestational period, triggering metabolic dysfunctions and substantial changes. The general objective of this study is to understand the approaches adopted by family health professionals to reduce the incidence of diabetes during pregnancy, focusing on the influence of lifestyle change (SEM) and the provision of appropriate guidelines for the provision of effective care to this specific group of patients. The methodology adopted for this research comprised an integrative literature review, of a quantitative nature. This methodological approach seeks to analyze and identify knowledge produced related to

the topic in question, aiming to deepen and adapt the available theoretical basis. During the review, 6 publications in Portuguese and 9 in English were considered, addressing different aspects of effectiveness in primary prevention, prophylactic measures, consequences of drug use, and the role of nurses in prevention and care. The discussions and results obtained focus on the need for targeted strategies to deal with the complications associated with gestational diabetes during pregnancy, highlighting the appropriate approach for affected newborns. The study emphasizes the importance of professional support in the face of clinical complications resulting from gestational diabetes, especially in situations of cyanosis and breathing difficulties after childbirth, emphasizing the importance of oxygen therapy to enable lung expansion and hematosis.

Keywords: Gestational diabetes, Prenatal interventions, Neonatal complications, Prevention strategies.

1 INTRODUCTION

Gestational diabetes mellitus is a metabolic condition that commonly affects women during pregnancy, this period is characterized by significant hormonal fluctuations, necessary to provide nutrients to the fetus. Due to these hormonal changes, a deficiency in the production, storage, and proper distribution of insulin in the body can occur.

Therefore, gestational diabetes is scientifically defined as metabolic adaptations during pregnancy. The lack of a proper diet and the absence of physical activity can result in physiological imbalances during this period (BOLOGNANI, 2011).

The complexity of gestational diabetes mellitus is highlighted, highlighting its association with the hormonal fluctuations inherent to pregnancy, in which hormonal changes can impact the production, storage and distribution of insulin, leading to metabolic challenges for pregnant women. The mention of metabolic adaptation during pregnancy shows how the body adjusts to meet the nutritional demands of the fetus, thus pointing to the importance of a balanced diet and physical activity to mitigate physiological imbalances, evidencing the relevance of self-care during this delicate period.



It is important to highlight the global epidemiological data related to glucose intolerance, affecting approximately 415 million adults, regardless of gender, being more prevalent among women during the gestational period, hyperglycemia triggers a variety of hormonal secretions, leading to insulin resistance, even when the pancreas produces insulin properly. In the national context, the Unified Health System (SUS) points to a prevalence of about 7.6% of cases of gestational diabetes (GDM) in Brazil, with approximately 94% of cases referring to impaired glucose tolerance and 6% diagnosed as gestational diabetes.

Recent studies, such as the one by Salvadori and Silva (2022), highlight that factors such as body weight, age, gender, and educational level exert a significant influence on the development of gestational diabetes. These authors highlight the importance of continuous and systematic monitoring of the mother and fetus to ensure a healthy development and adequate treatment of gestational diabetes, also pointing out that this condition is one of the main causes of hospitalizations in the Unified Health System (SUS), contributing to the emergence of heart and brain diseases and systemic arterial hypertension. This overload on the public health system reveals the lack of physical structure and human resources to meet the current demands in Brazil (SALVADORI; SILVA, 2022).

In this study, we emphasize the importance of continuous follow-up by health professionals throughout pregnancy, including periodic examinations in the different trimesters. These practices play a direct role in the prevention and treatment of gestational diabetes, in line with health policies aimed at women and the principle of continuity in public health care in Brazil.

It should be noted that gestational diabetes mellitus (GDM) seeks to analyze the complications resulting from this condition during pregnancy, affecting approximately 6% of women. Thus, this study seeks to understand the factors that trigger this pathology and how professional intervention can open ways to promote body stability and a healthy pregnancy, free of complications.

The research has significant social relevance, since it is directly linked to the development of strategies for the well-being of pregnant women. In the academic sphere, it encourages the exploration of studies related to the theme, contributing positively to research (BRASIL, 2013).

Thus, the general objective of this research was to understand the ways in which health professionals of the family health strategy can impact the reduction of cases of gestational diabetes and how these interventions can influence changes in lifestyle, aiming to provide essential guidelines to offer effective care to this public. More specifically, we sought to understand the epidemiological profile of neonatal complications related to diabetes mellitus, to analyze the epidemiological profile of pregnant women with diabetes mellitus, to evaluate the nursing care provided to pregnant women with diabetes mellitus; To identify nursing care practices for newborns with complications resulting from pregnancies with diabetes mellitus in primary care.



2 METHODOLOGY

In order to understand diabetes mellitus, we propose an integrative review of the literature. According to Souza, Silva and Carvalho (2010, p. 102), the integrative review is a method that synthesizes knowledge and incorporates the applicability of the results of relevant studies in practice. Based on this premise, this literature review was conducted to explore the main factors associated with this condition.

This literary study focuses on the analysis of the results obtained in a specific theme, allowing a systematized and comprehensive organization within the context of the research. It is critical to explore the manifestations that may arise during childbirth and its execution, especially with regard to fetal well-being and the circumstances of birth, which may result in classifications such as small for gestational age (SGA) or large for gestational age (LGA). It is noteworthy that the status (LGA) can present several risk factors for extrauterine life, including the risk of brachial plexus detachment during vaginal delivery maneuvers (ORIENTE, 2015).

To delimit the period of analysis, the years 2018 to 2022 were considered from the following databases: Lilacs (Latin American and Caribbean Literature in Health Sciences), Scopus (Elsevier), DECS, VHL (Virtual Health Library) and CAPES. The investigation was conducted during the months of September and October 2023. The search terms used were Hyperglycemia, obesity and insulin, and their respective translations into English: Hyperglycemia, Insulin and Obesity.

Using the Boolean operators provided by the VHL system together with the search formulation for scientific research, it was possible to elaborate the following expression to validate the descriptors: Hyperglycemia AND Insulin AND Obesity AND health care OR medical assistance.

3 RESULTS

Considering that Gestational Diabetes Mellitus is part of a group of metabolic disorders that share hyperglycemia as a common characteristic, it is essential for the health team to recognize that it should not be seen as an isolated disease. Thus, early diagnosis and appropriate treatment play a key role in mitigating or eradicating these problems.

However, it is important to emphasize that the Unified Health System (SUS) has adopted educational measures and campaigns aimed at pregnant women affected or susceptible to GDM, aiming to avoid complications for both patients and their babies.

The literature highlights that the manifestation of hyperglycemia during pregnancy can present itself through symptoms such as polyuria, polydipsia, weight loss, polyphagia and blurred vision, or through acute complications, representing risks to life. It is essential that health professionals, from community agents to the entire medical team, be attentive to any sign of these symptoms, emphasizing, therefore, that the effectiveness of treatment is amplified when prevention is early.



During pregnancy, the presence of diabetogenic hormones is observed, due to the hyperinsulinemic state, which reduces insulin sensitivity. Hormones such as progesterone, cortisol, prolactin and placental lactogenic hormone are naturally produced in the female body during this period.

For this reason, it is essential to control Gestational Diabetes Mellitus (GDM), as inadequate control can considerably increase the risks for both the pregnant woman and the baby during the prenatal and neonatal stages. Contracting GDM can increase the likelihood of developing other types of diabetes, such as type 2 diabetes mellitus, for women after childbirth, further increasing the risk of the disease manifesting itself in future pregnancies and children.

Therefore, proper diagnosis and treatment of GDM plays a crucial role in ensuring the health of the pregnant woman, the baby, and future pregnancies, as well as reducing the risks to future children.

It is important to identify the group of women with greater susceptibility to the development of Gestational Diabetes Mellitus (GDM), factors such as age, weight, family history, height of the woman, fetal growth, presence of polyhydramnios, hypertension or preeclampsia during the current pregnancy, as well as obstetric history of fetal or neonatal death and macrosomia are considered significant for the emergence of GDM.

Age over 25 years is an indication of risk, as well as excessive weight gain during pregnancy, family history with affected first-degree relatives is also an important indicator. A clinical look is essential for pregnant women with a height of less than 1.50m, as well as those with non-standard fetal growth.

Healthcare professionals should be on the lookout for any abnormality or behavior that is not expected for GDM, as many pregnant women have little information on the subject, for example, the overgrowth of the fetus can be interpreted as simply a large and healthy baby, but in reality, it can indicate GDM.

For this reason, an accurate diagnosis is essential, usually made by tests such as the Oral Glucose Tolerance Test (OGTT), which should be requested between the 24th and 28th week of pregnancy, if the pregnant woman has other risk factors, as mentioned earlier, OGTT can be performed early, around the 20th week.

The care of GDM does not end with childbirth. After delivery, women diagnosed with GDM need to be reassessed, either by measuring fasting glucose or by OGT, approximately six weeks postpartum, in order to reclassify their metabolic status.

It has been identified that patients can monitor their blood glucose through capillary tests, this procedure requires multiple daily measurements to accurately reflect the actual glycemic profile, stored in the device's memory.



Once GDM is properly controlled, complications can be prevented. However, the patient's cooperation is essential to follow the recommended procedures, such as daily monitoring of capillary blood glucose, adherence to the prescribed diet, physical activity and, if necessary, insulin therapy, these self-care practices, although they depend mainly on the patient, require professional evaluation and follow-up.

Based on the knowledge acquired, it was noticed that pregnant women with excellent metabolic control and without obstetric history such as perinatal death, macrosomia or associated complications, such as hypertension, can have a normal delivery. GDM is not an automatic indication for cesarean section; This decision is made by the obstetrician after assessing the ratio of the maternal pelvis to fetal size to determine the feasibility of vaginal delivery or the need for surgical intervention.

Prolonged deliveries require special attention, and it is necessary to carefully evaluate the proportions between the fetus and the pelvis to avoid shoulder distortion. If signs of disproportion are noticed, the obstetrician may indicate a cesarean section, in scheduled deliveries, the pregnant woman should remain fasting, and if it is a spontaneous normal delivery, blood glucose monitoring is recommended, during labor, blood glucose levels should be kept below 120 mg/dl.

After the baby is born, blood sugar levels are expected to return to normal. Generally, this is observed, however, it is crucial to carry out a medical evaluation, with a glucose tolerance test between 6 and 12 weeks after delivery, this follow-up is of great importance to avoid complications in future pregnancies or the development of type 2 diabetes in the woman.

Table 1. Detailed description of the items found.

No.	Author	Type of study	Title	Objective	Result/Conclusion
01	Salvadori and Silva 2022	Literature Review	Gestational Diabetes Mellitus – Literature Review	"To present the relationships between maternal and fetal conditions, emphasizing the relevance of early identification and follow-up of GDM." (SALVADORI; SILVA, 2022, p. 73).	"Early identification of GDM, appropriate follow-up, and the use of appropriate pharmacological therapy can have a positive impact on the quality of life of the pregnant woman, as well as the future health of the mother and baby." (SALVADORI; SILVA, 2022, p. 73).
02	Caldas et al., 2021	Literature Review	DIABETES IN PREGNANCY AND ITS INFLUENCE ON EMBRYO FORMATION	Address the most frequent risks of congenital anomalies associated with diabetes during pregnancy, as discussed in the publications	"Diabetes has a significant impact on the development of congenital anomalies, triggering malformations that affect the continuity of pregnancy and the various stages of organ formation in fetal development. These conditions can result in congenital anomalies that



				(CALDAS et al, 2022, p. 387).	compromise survival after birth (CALDAS et al, 2022, p. 387)."
03	Bertoli, et al. 2022.	Case Study	Gestational diabetes mellitus: symptoms, diagnosis and treatment.	Analyze the care, complications, and risks associated with gestational diabetes, as well as examine treatment options and challenges faced by patients with this condition during pregnancy (BERTOLI et al, 2022, p. 10052).	"Gestational diabetes is usually identified during routine examinations and often does not manifest evident symptoms, making blood tests crucial for early diagnosis (BERTOLI et al, 2022, p. 10059)."
04	Mathias et al., 2022	Literature Review	Gestational diabetes mellitus: a review of the literature	To analyze gestational diabetes mellitus, addressing epidemiological and pathophysiological aspects, clinical manifestations, diagnostic methods and therapeutic options.	"This condition is often asymptomatic and affects a significant portion of pregnant women. If not identified and treated promptly, it can lead to substantial complications for both mother and fetus (MATHIAS et al, 2022, p. 37194)."
05	Silva et al (2022).	Integrative literature review	CARE OF THE MULTIDISCIPLINARY TEAM IN THE PREVENTION OF DIABETES MELLITUS GES	"To conduct a literature review on the role of the multidisciplinary team in the prevention of diabetes mellitus during pregnancy." (SILVA et al, 2022, p. 01) "	The work of the multidisciplinary team is essential in the prevention of gestational diabetes mellitus, using health promotion approaches aligned with the guidelines of the Ministry of Health. "The aim is to prevent and reduce incidences of gestational diabetes through humanized follow-up, minimizing the risk of associated morbidity and mortality." (SILVA et al, 2022, p. 06-07).
06	Araújo; P; Paiva 2022.	Literature Review	Gestational Diabetes: Evolution of Diagnostic and Therapeutic Criteria.	To analyze the evolution of diagnostic and therapeutic criteria for gestational diabetes over time.	After extensive research in the area of gestational diabetes (GD), there is still a lack of consensus in its approach, both in relation to diagnostic criteria and therapeutic strategies. In recent years, several scientific societies have adopted the guidelines proposed by the IADPSG/WHO, resulting in an increase in GD diagnoses on a global scale and allowing therapeutic interventions to improve perinatal outcomes." (ARAÚJO; P; PAIVA, 2022, p. 52).



07	REIS; VIVIAN; GUALTIERI (2019)	Literature Review	GESTATIONAL DIABETES MELLITUS: MATERNAL-FETAL PATHOPHYSIOLOGICAL ASPECTS	Describe the clinical aspects related to gestational diabetes, focusing on its pathophysiology for both mother and fetus. (KINGS; VIVIAN; GUALTIERI, 2019, p. 32).	By drawing attention to the clinical aspects of gestational diabetes, particularly its maternal-fetal pathophysiology (REIS; VIVIAN; GUALTIERI, 2019, p. 32), it is important to understand that this condition impacts a broad spectrum of people, regardless of their diverse social conditions around the world. This condition manifests itself when the hormones that antagonize the action of insulin are at high levels, resulting in a challenge for the pancreas, which cannot, as a compensation mechanism, produce insulin in sufficient quantities.
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Source: Elaboration of the authors according to the articles found.

4 DISCUSSION

According to Salvadori and Pereira Silva (2022), gestational diabetes mellitus is a public health challenge that, according to epidemiology, most frequently affects women with a lower level of education, brown or black, living in peripheral areas and belonging to economic strata C, D and F.

The Ministry of Health also adds that this condition affects approximately 18% of the almost 3 million births performed annually in Brazil.

Considered a global health problem, the World Health Organization (WHO, 2013) classifies gestational diabetes mellitus as the increase in blood glucose during pregnancy. Importantly, the following:

Gestational diabetes mellitus is a serious condition that impacts a large number of people from diverse social conditions around the world. It occurs when the hormones that antagonize the action of insulin are elevated and the pancreas is unable to produce a sufficient amount of insulin as a compensatory mechanism (REIS; VIVIAN; GUALTIERI, 2019, p. 44).

In addition, gestational diabetes mellitus is understood as 'a silent condition that affects many pregnant women and, if not identified and treated in time, can lead to significant complications for both mother and fetus.' (MATHIAS et al, 2022, p. 37194).

When correlated with the pathophysiological profile, it is noted that gestational diabetes (GD) is characterized by an abnormality in carbohydrate tolerance, diagnosed or treated for the first time during pregnancy, leading to varying levels of hyperglycemia in the mother. (ARAÚJO; P; PAIVA, p. 47).

It is relevant to point out that,



Most authors, as well as the Ministry of Health and the World Health Organization, recommend that the screening period should be performed at the first prenatal visit and the repetition between the 24th and 28th week of gestation, and only a small portion suggest that screening should be started at the 20th week of gestation. It is interesting to note that the Ministry of Health recommends screening for all women during pregnancy (SALVADORI; PEREIRA SILVA, 2022, p. 74).

The study by Caldas et al. (2022) addressed the risks of teratogenicity and the pathologies associated with gestational diabetes mellitus, emphasizing the relevance of health prevention. From this research, it was possible to reach the conclusion that:

The multidisciplinary team is extremely important in the process of preventing gestational diabetes mellitus, through health promotion interventions with guidance in accordance with the guidelines of the Ministry of Health in order to prevent and reduce cases of gestational diabetes mellitus and aiming at a humanized follow-up, reducing risks of morbidity and mortality (SILVA et al, 2022, p.06-07).

By highlighting the role of the multidisciplinary health team, in short, in the prevention of gestational diabetes mellitus. We emphasize the importance of interventions focused on health promotion, in line with the guidelines of the Ministry of Health, aiming at reducing cases of this specific condition, whose main objective is to provide humanized follow-up, which can result in a reduction in the risks of complications and mortality associated with gestational diabetes, which highlights the relevance of multidisciplinary support to effectively address and deal with this condition during pregnancy.

Going back to the topic in question, which points to significant progress in the development of treatment protocols for gestational diabetes over the years. The advancement of research and investments in continuing education for health professionals are highlighted as factors that have driven this evolution.

However, it does suggest that there is something relevant to be highlighted, something that perhaps deserves more emphasis or consideration. This caveat may indicate that there are ongoing challenges or specific areas that need further attention or improvement in gestational diabetes treatment protocols.

In this context, it should be noted that:

After decades of research in the field of GD, its approach is still not consensual, either in terms of diagnostic or therapeutic criteria. In recent years, several scientific societies have adopted the IADPSG/WHO recommendations, leading to an increase in the diagnosis of GD worldwide, and enabling therapeutic intervention with improved perinatal outcomes. (ARAÚJO; P; PAIVA, 2022, p. 52).

It is noteworthy that the lack of consensus in the approach to gestational diabetes, especially in relation to diagnostic and therapeutic criteria, thus pointing to the adoption of global recommendations



by several scientific societies as an advance that has led to an increase in the diagnosis of GD worldwide, improving perinatal outcomes. However, it also highlights that, although studies have contributed to treatment policies and health protocols, there is still a long way to go in terms of health education, which is essential to promote self-care and, consequently, expand preventive measures for this public health problem on a global scale.

5 FINAL CONSIDERATIONS

The authors' understanding of GD as a public health challenge is reinforced, showing its prevalence in women with a lower level of education, in peripheral regions, and in less favored economic groups. The study highlighted the relevance of specialized support in the face of clinical complications associated with gestational diabetes, especially in cases of cyanosis and postpartum breathing difficulties, emphasizing the decisive value of oxygen therapy to facilitate the expansion of the lungs and adequate oxygenation of the blood, and also emphasizing the categorical role of the multidisciplinary team in the prevention of GD. through interventions based on public health guidelines and the search for humanized follow-up to reduce the risks to the mother and fetus.

In the context of the present study, prevention and early diagnosis are essential to preserve the health of women and developing fetuses. It is important to expand public policies to address this condition.

Continuous follow-up by health professionals during pregnancy, along with the repetition of exams in the corresponding trimesters, plays an essential role in the prevention and treatment of gestational diabetes, in line with women's health guidelines and the principle of continuity in public health care in Brazil.

The research issue that surrounds this work highlights the advances in the GD approach, especially in diagnosis and treatment, promoted by global recommendations. However, the lack of consensus regarding diagnostic and therapeutic criteria is highlighted, pointing to the continuous need for health education to promote self-care and expand preventive measures.

The in-depth understanding of these aspects emphasizes the importance of the multidisciplinary approach to effectively deal with GD, while pointing to the need for greater clarity and consensus in the definition of diagnostic and treatment protocols.

This review highlights both advances and persistent challenges, highlighting key areas for future research and interventions.



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