

**Nursing care for patients with gestational diabetes mellitus: a literature review***Atención de enfermería a pacientes con diabetes mellitus gestacional: revisión de la literatura**Assistência de enfermagem a paciente com diabetes mellitus gestacional: uma revisão de literatura***Cintia Bonani Shimoe<sup>1</sup>**

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**Abstract**

The aim was to analyze the evidence in the literature about nursing care in Primary Care for patients who had Gestational Diabetes Mellitus. This is an integrative literature review, the selected databases were: PubMed, SciELO and the VHL database platform. The following descriptors were used: Diabetes, Gestational; Nursing Care; Primary Health Care and Public Health. The research resulted in 325 works, after reading only 11 articles were selected, which were classified into four categories, namely: Understanding the potential of care; identifying the factors that affect the results; Capacity building/training/knowledge; Weaknesses of care. It is concluded that the management of patients with gestational diabetes mellitus in Primary Care becomes extremely relevant for reducing maternal-fetal complications as well as for decreasing the incidence of progression to type 2 diabetes.

**Descriptors:** Diabetes, Gestational; Nursing Care; Primary Health Care; Public Health Nursing; Nursing.**Resumén**

El objetivo fue analizar la evidencia en la literatura sobre la atención de enfermería en Atención Primaria a pacientes con Diabetes Mellitus Gestacional. Se trata de una revisión integradora de la literatura, las bases de datos seleccionadas fueron: PubMed, SciELO y la plataforma de base de datos BVS. Se utilizaron los siguientes descriptores: Diabetes, Gestacional; Cuidado de enfermera; Atención Primaria de Salud y Salud Pública. La investigación dio como resultado 325 trabajos, luego de la lectura solo se seleccionaron 11 artículos, los cuales fueron clasificados en cuatro categorías, a saber: Comprender el potencial del cuidado; identificar los factores que afectan los resultados; Creación de capacidad / formación / conocimiento; Debilidades de la atención. Se concluye que el manejo de pacientes con diabetes mellitus gestacional en Atención Primaria adquiere una gran relevancia para reducir las complicaciones materno-fetales así como para disminuir la incidencia de progresión a diabetes tipo 2.

**Descriptores:** Diabetes Gestacional; Cuidado de Enfermera; Atención Primaria de Salud; Enfermería en Salud Pública, Enfermería.**Resumo**

Objetivou-se analisar as evidências na literatura sobre a assistência de enfermagem na Atenção Básica a paciente que apresentaram o Diabetes Mellitus Gestacional. Trata-se de uma revisão integrativa de literatura, as bases de dados selecionadas foram: PubMed, SciELO e a plataforma de base de dados BVS. Os seguintes descritores foram utilizados: Diabetes, Gestacional; Nursing Care; Primary Health Care e Public Health. Resultou-se das pesquisas 325 obras, após a leitura foram selecionados apenas 11 artigos, que foram classificados em quatro categoria, são elas: Compreendendo as potencialidades do cuidado; identificando os fatores que interferem nos resultados; Capacitação/treinamento/conhecimento; Fragilidades do cuidado. Conclui-se que o manejo em pacientes com diabetes mellitus gestacional na Atenção Básica torna-se extremamente relevante para a diminuição das complicações materno-fetais como também na diminuição da incidência da progressão para a diabetes tipo 2.

**Descritores:** Diabetes Gestacional; Cuidados de Enfermagem; Atenção Primária à Saúde; Enfermagem em Saúde Pública; Enfermagem.

## Introduction

Pregnancy is a physiological and temporary state that involves physical, social, psychological, and hormonal changes. These changes can cause some symptoms that are normal and considered healthy when they do not impact the health of the woman, fetus, or newborn. However, when the opposite occurs and these changes interfere in the health of both, the pregnant woman will be classified as high risk, which may give rise to some disorders, including Gestational Diabetes Mellitus (GDM)<sup>1</sup>.

Considered a Public Health problem, GDM is defined as glucose intolerance, characterized by an irregular or uncontrolled increase in blood glucose with the onset of the first recognition of the gestational period, which may or may not extend after the baby is born<sup>2</sup>.

It is caused by insulin resistance due to hormonal changes, including progesterone, prolactin, cortisol, and placental lactogenic hormone, in addition to the physiological stress of pregnancy and genetic factors. It is classified as the most common metabolic disorder during pregnancy, a total of 25% of pregnant women in 2019, according to data from the Brazilian Society of Diabetes (SBD)<sup>2</sup>.

In the United States, in 2016, the gross national prevalence of gestational diabetes was 6.0%, increasing relative to the prevalence of GDM from 2012 to 2016. In mainland China, between 2010 and 2017, the total incidence of GDM was 14, 8%<sup>3,4</sup>.

In Brazil, in 2017, GDM is one of the main metabolic disorders of pregnancy and has an estimated prevalence between 3 and 25%, varying according to the population studied and the diagnostic criteria used<sup>5</sup>.

In addition to advanced maternal age, the susceptibility to developing GDM may be associated with the following criteria: family history of first-degree relatives with diabetes, overweight and obesity, excessive weight gain during pregnancy, polyhydramnios, history of abortion or stillbirth, syndrome of polycystic ovary, hypertension and/or pre-eclampsia<sup>6</sup>.

For the woman with GDM, there may be some complications consisting of caesarean and premature delivery, premature placental displacement, hemolysis syndrome, elevated liver enzymes, low platelet count (HELLP), coagulopathy, hypertensive disorders such as preeclampsia, postpartum hemorrhage, and the development of type 2 DM after pregnancy<sup>7</sup>.

Furthermore, GDM is directly associated with fetal anomalies caused by insulin hypersecretion in the baby, causing neurological disorders, fetal distress, birth trauma, increased serum bilirubin levels, hypoglycemia, hyaline membrane disease and especially fetal macrosomia<sup>7</sup>.

The diagnosis of this disorder is carried out based on prenatal consultations. At the pregnant woman's first appointment, fasting blood glucose testing is recommended. The reference value is less than 90mg/dl<sup>8</sup>.

If the value is higher than the reference, the test must be repeated immediately, if the result is greater than 110mg/dl, the pregnant woman is diagnosed with Gestational Diabetes Mellitus. Otherwise, from the twenty-fourth week onwards, an oral Glucose Tolerance Test (TTG)

will be performed, also known as the glycemic curve. Result equal to or greater than 92mg/dl in fasting, there will be a diagnosis of Gestational Diabetes<sup>8</sup>.

For the control of GDM, non-pharmacological measures can be used, such as adherence to an adequate and individualized diet, including foods such as fruits, vegetables, legumes and whole foods, avoiding foods that contain high levels of sugar, and pharmacological measures, such as oral antidiabetics and insulin, which should be started if the recommended glycemic goals are not reached within a period of 1 to 2 weeks after the implementation of non-pharmacological measures<sup>9,10</sup>.

Prenatal care is assisted in Basic Health Units and nurses must always be able to guide pregnant women, planning and executing care that provides healthy lifestyle habits. A follow-up work and an empathic approach. This work, when performed by the nurse during prenatal care, allows the pregnant woman to arrive at childbirth making conscious choices, with a reduction in pregnancy complications<sup>2</sup>.

As one of the main pathologies of pregnancy, the study proves to be totally relevant to the health area, especially for Primary Health Care (PHC), in which care for pregnant women needs to be efficient and rigorous, as the situation can be fully controlled with comprehensive care to the pregnant woman during prenatal consultations.

Given these considerations, the following research question emerged: how has scientific evidence addressed the nursing care of women who developed gestational diabetes mellitus? The aim of this research was to analyze the evidence in the literature on nursing care in Primary Health Care for patients who presented Gestational Diabetes Mellitus.

## Methodology

It is an Integrative Literature Review, which makes it possible to gather and synthesize the research results found in the literature on the subject, demonstrating the contributions, gaps and limitations of the evidenced scientific results, seeking evidence to redirect care practices<sup>1</sup>.

Thus, the following steps were used for elaboration: (1) identification of the theme and selection of the hypothesis or research question; (2) establishment of inclusion and exclusion criteria for studies, selection of databases, descriptors used and collection of data from articles; (3) list the relevant information for collecting data from the chosen studies; (4) analysis of the articles chosen for review; (5) interpretation of the results found; (6) presentation of scientific research results<sup>11</sup>.

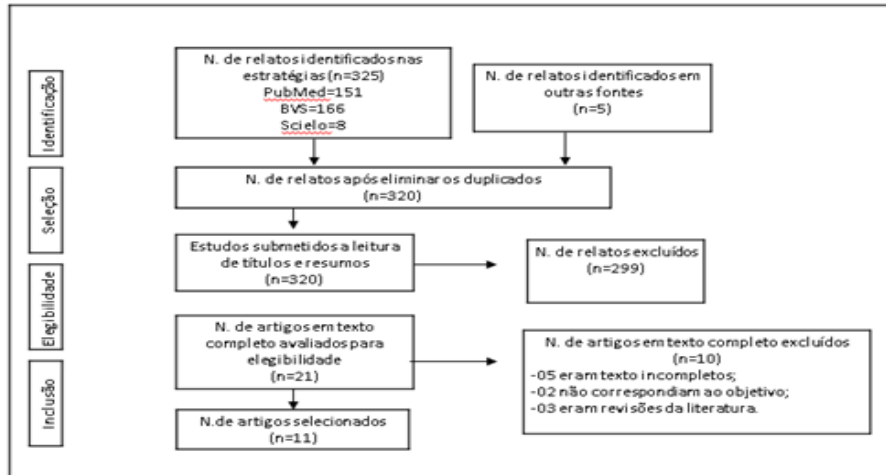
The research question was elaborated with the application of the PICO strategy (Population, Intervention and Context)<sup>11</sup>. The criteria for inclusion were: scientific papers, published in the last five years (2016-2020), written in Portuguese, Spanish and English, related to the subject of study, involving human beings, available online as a free and complete article. with access to all audiences. The collection bases were: National Library of Medicine (PubMed), Scientific Electronic Library online (SciELO) and the Virtual Health Library (VHL) database platform, including.



Based on the inclusion and exclusion criteria, 325 works were found in the analyzed databases, 151 in PubMed, 166 in the VHL and 8 in SciELO. After careful reading and

application of the eligibility criteria, 11 articles remained, according to the flowchart below.

Figure 1. Flowchart representing the selection of articles for this review. Maringá, PR, Brazil, 2021



The descriptors selected to search the articles were used according to the Descriptors in Health Sciences (DeCS): Gestational Diabetes; Nursing care; Primary Health Care and Public Health. The descriptors in the Medical Subject Headings (MeSH/PubMed): Diabetes, Gestational; Nursing Care; Primary Health care; Public Health.

All descriptors were combined with each other using the Boolean AND Operator. The following terms were used for research: "Gestational Diabetes" AND "Nursing

Care"; "Gestational Diabetes" AND "Primary Health Care"; "Diabetes Gestacional" AND "Public Health", and their respective terms in English and Spanish.

Data collection will be carried out in May and June 2021, in which all titles, abstract and full text will be read, respectively. The key information to compose the categories will be extracted and operationalized through the word cloud elaborated with the help of Plus 2020's MAXQDA software.

Figure 2. Figure showing the word cloud organized based on the Max QDA Plus software. Maringá, PR, Brazil, 2021



As it is a bibliographic research, authorization from the Ethics Committee was waived, as it does not involve studies with human beings.

**Results**

The final sample consisted of eleven articles, which include this integrative review.

Most of the selected studies were of African origin (n=7), the rest were carried out in Colombia, Brazil, Ireland, and the United States. The selected works were from quantitative (n=05) and qualitative (n=06) research. As shown in Chart 1, the main results found in the studies selected for this review are highlighted.



Chart 1. Chart representing the characterization of the articles selected for this integrative review, in the period from 2016 to 2020. Maringá, PR, Brazil, 2021

ID	Year	Main Findings
A01 <sup>12</sup> (Ramaiya et al., 2018)	2018	Diabetes during pregnancy is rarely sought in public health facilities and its treatment is suboptimal. Staff training and refresher courses on diabetes and hypertension should be promoted and health systems strengthened to improve the capacity and capacity of health facilities for better quality of care.
A02 <sup>13</sup> (Muhwava et al., 2018)	2018	Interventions in health systems that support and facilitate the active follow-up of women with previous GDM are needed to prevent high rates of progression to type 2 diabetes.
A03 <sup>14</sup> (Schaefer-Graf et al., 2018)	2018	The work of the last decade has better defined future challenges for research and clinical care in diabetes in pregnancy. Research and clinical focus on the preconception period and the first trimester are essential to improving pregnancy outcomes for women with pre-pregnancy diabetes. New technologies to improve glycemic control (CGM and CSII) in diabetic pregnancy show promise, but it remains unclear how best to use them.
A04 <sup>15</sup> (Shofang et al., 2019)	2019	There were significant differences in fasting glucose (FBG) and 2h postprandial glucose (2hPG) levels between the two groups (P < 0.05). There was a lower incidence of preterm birth, fetal macrosomia, eclampsia, pregnancy hypertension syndrome and fetal distress in the observation group.
A05 <sup>16</sup> (Mensah et al., 2019)	2019	Most participants indicated the need for education about GDM, but both women and obstetric nurses recognized that this education is extremely insufficient. Participants generally felt that emotional support for women is critical and was included in the nursing management of the DMG. Cultural and socioeconomic issues, such as cultural beliefs that conflicted with diets for diabetics, lack of financial and social subsidies, and limited staff of nurse-midwives were mentioned by both groups as affecting the nursing management of the DMG.
A06 <sup>17</sup> (Utz et al., 2017)	2017	Primary public health care providers have a basic understanding of gestational diabetes, but screening and management practices are not uniform. Although 56.8% of physicians had some initial training in gestational diabetes, most nurses and midwives do not have this training. After the diagnosis of GDM, 88.5% of providers refer patients to specialists, only 11.5% treat them as outpatients.
A07 <sup>18</sup> (Mendieta et al., 2017)	2017	The task of nursing is to improve the knowledge and skills of patients with gestational diabetes for their self-control. Currently, there is sufficient evidence on the value of education in patients diagnosed with diabetes in pregnancy to achieve treatment adherence and decrease the need for insulin, improving perinatal outcomes.
A08 <sup>19</sup> (Guerra et al., 2019)	2019	It is shown that 41 (23.04%) participants had less than six prenatal consultations with an obstetrician and 148 (77.5%) had fewer than four nutritional consultations in the prenatal period.
A09 <sup>20</sup> (Utz, et al., 2018)	2018	The earlier GDM was detected, the greater the differences in birth weight in the respective gestational age categories at diagnosis (<24, 24-28, >28 weeks) between the two groups. Infants of women with one-third or more fasting blood glucose values within the norm during follow-up had lower birth weights than infants born to mothers with less than one-third of balanced glucose values. Mean birth weight was higher in women on insulin treatment compared to women on a diet. The incidence of macrosomic babies, defined as newborns with a birth weight of 4,000 grams and more, was lower in the intervention group. Women in the intervention arm were detected an average of 10 days earlier than women in the control group. The detection and care of GDM through prenatal care in basic health units may have had a positive impact on newborn weight at birth, but the results are inconclusive.
A10 <sup>21</sup> (Molina et al., 2019)	2019	Nine percent (1,887 women) of 21,699 records of pregnant women were at risk for gestational diabetes. Of these, 1,880 records with complete data were analyzed. Sixty-nine entered the program at less than 24 weeks of pregnancy and 71% had a fasting blood glucose measured in the first control. In 69.2% of these women, the criteria for gestational diabetes were met. A glucose tolerance test has been suggested for women with blood glucose below 92 mg/dl. Among 72% of the latter, the glucose tolerance test met the criteria for gestational diabetes. Among the 498 women who entered the program after 24 weeks' gestation, 68% met criteria for gestational diabetes with fasting blood glucose levels. In 90 women, a glucose tolerance test was performed and 80% met criteria for gestational diabetes.

A11 <sup>22</sup> (Utz et al., 2020)	2020	The screening and treatment intervention for women with gestational diabetes added value to existing antenatal care services but represented an additional workload for frontline health professionals. The lack of existing knowledge about gestational diabetes in the community and among private health practitioners required public providers to spend more time counseling women. Nurses had to adapt dietary recommendations to the socioeconomic context of patients.
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In the table above, it is noted that the studies discuss nursing care for patients with gestational diabetes mellitus in primary care.

The content was divided into four classes, whose contents were carefully analyzed and systematically organized, called: Care Potentials; Factors that affect the results; Qualification, Training and Knowledge and Weaknesses of Care.

### Understanding the Potential of Care

This class demonstrates the main potential of care for pregnant women diagnosed with gestational diabetes mellitus in Primary Health Care. Among them, we obtained the following results: positive impacts on newborn weight at birth, lower occurrence of fetal complications, significant differences in blood glucose fasting and greater value to prenatal care services existing in primary care.

In the studies analyzed, the early detection of GDM in pregnant women, together with the effective control of the blood glucose level and nursing monitoring during prenatal care, resulted in a lower incidence of premature birth, fetal macrosomia, eclampsia, hypertension syndrome in pregnancy and fetal distress in pregnancy<sup>15-20</sup>.

In addition, prenatal care had a positive impact on the low birth weight of the newborn. Fetal macrosomia, defined as birth weight greater than or equal to 4000 grams in newborns, is very common in cases of mothers diagnosed with GDM. The earlier GDM was detected, the greater the differences in birth weight in the respective gestational age categories at diagnosis (<24, 24-28, >28 weeks)<sup>20</sup>.

The role of Nursing stands out in the integral care of these pregnant women, carrying out the reception and monitoring from early detection to the postpartum period, improving the knowledge and skills of these patients, contributing to self-care, and improving perinatal outcomes. According to the results, the nursing care actions carried out added greater value in primary health care and in the SUS<sup>18-22</sup>.

### Identifying the factors that interfere with the results

In this class, we will address the main factors that interfere with the results of nursing care in patients diagnosed with gestational diabetes mellitus.

Studies approach that the lack of financial and social subsidies directly affected the adherence to the diet for diabetics, which should be carried out during pregnancy for patients with GDM. Furthermore, 77.5% of pregnant women had fewer than four nutritional consultations in the prenatal period<sup>16,19</sup>.

This shows us that only less than half of patients followed up with DGM adhered to non-pharmacological measures as recommended, which further contributes to the

emergence of maternal-fetal complications and progression to type 2 diabetes mellitus.

Another significant factor was that there are limited teams that contain the obstetric nurse, making it difficult to manage nursing at the DMG. Due to this limitation, the additional workload for health professionals has increased, which may contribute to the increased stress of these professionals and lower quality of care<sup>16,22</sup>.

### Qualification, Training and Knowledge

This class represents the need for training, training of health professionals on the management of patients with gestational diabetes mellitus, improving the quality of care provided, establishing greater trust and bonding between professional and patient, and thus contributing to greater adherence to treatment of GDM and lower incidence of neonatal complications and evolution to type 2 diabetes mellitus<sup>22</sup>.

During the research, the lack of knowledge of health professionals is a relevant problem that should be discussed. Because of this, the patients were also unaware of the topic, making the consultation time longer, in addition to the fact that they were unable to acquire the trust of these professionals and often did not adhere to the treatment<sup>16</sup>.

Training and initial training in the GDM approach, especially for midwives and nurses, is extremely necessary to improve the quality of care and treatment adherence. According to studies, most doctors have initial training, but this is not done with other professionals<sup>12-16</sup>.

### Weaknesses of Care

In the fourth and last class, the main weaknesses in the care of patients diagnosed with GDM in primary care will be described. One of the weaknesses pointed out was that although there are guidelines for the management of patients with GDM, there is a need for continuity of care in the postpartum period, avoiding high rates of progression to type II GDM<sup>13</sup>.

Health systems need to be strengthened for a greater capacity of the units, and thus, assistance offered with greater quality. Current technologies need to be better used both for the training of professionals, who still need training today, and for the improvement of glycemic control during pregnancy<sup>12-14</sup>.

Emotional support for pregnant women with this diagnosis is essential and should be prioritized in nursing care. It is known that pregnancy involves significant changes in a woman's life, and, even more so with the diagnosis of GDM, this woman needs to be welcomed by professionals in the primary care service, establishing a bond with professionals, there will be a very positive impact in the end of pregnancy<sup>16</sup>.



## Discussion

Based on the articles analyzed, it became clear that gestational diabetes is one of the most common disorders during pregnancy. Treatment adherence is essential to avoid complications and it was highlighted that treatment adherence is less than ideal<sup>12</sup>.

For women of childbearing age, effective screening for GDM during pregnancy is necessary, receiving adequate prenatal care, with positive pregnancy outcomes. Nursing care for pregnant women is essential, because during prenatal care it is possible to develop actions to comfort the pregnant woman, control the disease and prevent complications, establishing a safe environment for birth. In addition, improving postpartum screening and follow-up care for women after GDM is critical to preventing the progression of type 2 diabetes mellitus<sup>2,13</sup>.

The Health System must improve its responsiveness and capacity to prevent and manage chronic diseases that affect women of reproductive age. It must be strengthened by expanding the training of health professionals to improve the quality of care. In the pre-pregnancy period and in the first trimester, investigation and clinical focus are essential to improve pregnancy outcomes<sup>12-14</sup>.

Nutritional nursing intervention based on a combination of quality and quantity of carbohydrate intake for each individual patient can effectively control the blood glucose level, reduce the incidence of pregnancy complications, and improve perinatal outcome. Furthermore, nutritional monitoring during pregnancy is a low-cost strategy that provides knowledge and self-care once the disease is established<sup>15,19</sup>.

Lack of education, cultural and socioeconomic issues are identified challenges and affect the quality and adherence to treatment, but they need to be faced. Emotional support for pregnant women is essential, involving women and their loved ones, as part of comprehensive nursing management for women who have been diagnosed with GDM<sup>16</sup>.

According to the Guidelines of the Brazilian Society of Diabetes, GDM can occur in 1% to 14% of all pregnancies, depending on the population studied. Therefore, the nursing team must have the knowledge to assist and educate the patient so that she assumes self-control and achieves adherence to treatment. Nurses must always be able to guide pregnant women, especially those who tend to lack self-care, in addition to planning and implementing care that provides healthy lifestyle habits.

Being classified as a high-risk pregnancy, the team must act in strict monitoring of the pregnant woman with

the doctor, with more complex exams, with an empathetic approach performed by the nurse during prenatal care, allowing the pregnant woman to give birth making conscious choices, with the reduction of complications during pregnancy<sup>18,19</sup>.

The detection and care of GDM through prenatal care in basic health units may have had a positive impact on the reduction of maternal-fetal complications, such as the weight of the newborn at birth<sup>22</sup>.

GDM screening can be even more effective with the use of new technologies, in the hiring of new health professionals to reduce the large daily workload, which consequently causes a lack of motivation for these professionals and thus a lower quality of care provided to users<sup>22</sup>.

The Family Health Strategy has a very important role in tracking these pregnant women and in the early diagnosis of GDM. As the gateway for pregnant women to the Unified Health System (SUS), the nursing team is responsible for guiding and transmitting information to pregnant women in prenatal consultations, working to prevent maternal-fetal complications and promote health, intervening with early actions, establishing a bond with these women for greater confidence and thus providing a calmer pregnancy<sup>11,12</sup>.

The perception of health professionals to risk factors, as well as knowing what measures should be taken to avoid maternal-fetal risks are essential for early diagnosis and establishment of appropriate therapy, showing that awareness and health education actions, are strategies that provide women with knowledge and self-care.

## Conclusion

It is concluded that the management of patients with gestational diabetes mellitus in Primary Care becomes extremely relevant for reducing maternal-fetal complications as well as for decreasing the incidence of progression to type 2 diabetes. The importance of health professionals is evident, especially the nursing team is responsible for guiding pregnant women about the disease, planning and implementing care that provides healthy lifestyle habits.

In addition, they carry out the reception, establishing greater trust and a greater bond between the professional and the patient, facilitating treatment adherence to improve the quality of life of the pregnant woman and the baby. Although there is management of Gestational Diabetes Mellitus in Primary Care, there is still a need for training and training of professionals to better serve these pregnant women.

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