

DOI: <https://doi.org/10.36489/saudecoletiva.2021v11i66p6335-6348>

Profile of women affected by diabetes mellitus gestacional with insulinotherapy in a federal maternity

Perfil de mujeres afectadas por diabetes mellitus gestacional con insulinoterapia en una maternidad federal

Perfil de mulheres acometidas pelo diabetes mellitus gestacional com insulinoterapia em uma maternidade federal

ABSTRACT

Describe the sociodemographic and obstetric profile of woman, in the presence of Gestational Diabetes Mellitus (GDM) using insulin, in a Federal Maternity Hospital in the State of Rio de Janeiro. Method: Descriptive, quantitative, transversal and documentary study, consisting of 126 records. Data collection was carried out from March to October 2020. Results: The sample had a higher percentage (57.94%) of GDM with need for insulin use in young women, non-smokers (94.44%), or alcoholics (92.06%), sedentary (84.92%), obese (65.85%), multiparous (75.40%), with a minimum number of 6 prenatal consultations recommended by the Ministry of Health and cesarean section as the main route of birth (74.61%). There were comorbidities associated with GDM (52.38%), but with a low percentage of complications during pregnancy (23.81%) and absence of stillbirth. Conclusion: It is necessary that more studies be performed in the unit, in order to unveil more factors associated with the profile of pregnant women with GDM and the performance of cesarean sections.

DESCRIPTORS: Gestational Diabetes; High-Risk Pregnancy; Pregnancy Complications; Insulin.

RESUMEN

Describir el perfil sociodemográfico y obstétrico de la mujer, en presencia de Diabetes Mellitus Gestacional (DMG) con insulina, en una Maternidad Federal del Estado de Rio de Janeiro. Método: Estudio descriptivo, cuantitativo, transversal y documental, compuesto por 126 registros. La recolección de datos se llevó a cabo de marzo a octubre de 2020. Resultados: El porcentaje más alto (57,94%) de DMG que requirió uso de insulina en mujeres jóvenes, no fumadoras (94,44%) o alcohólicas (92,06%), sedentes (84,92%), obesas (65,85%), multíparas (75,40%), con un mínimo de 6 consultas prenatales recomendadas por el Ministerio de Salud y la cesárea como principal modalidad de parto (74,61%). Existen comorbilidades asociadas al DMG (52,38%), además de un bajo porcentaje de complicaciones durante el embarazo (23,81%) y ausencia de nacimiento y muerte. Conclusión: Es necesario que se realicen más estudios en la unidad, con el fin de revelar más factores asociados al perfil de gestantes con DMG y la realización de cesáreas.

DESCRIPTORES: Diabetes Gestacional; Embarazo de Alto Riesgo; Complicaciones del Embarazo; Insulina.

RESUMO

Descrever o perfil sociodemográfico e obstétrico de mulheres, na presença do Diabetes Mellitus Gestacional (DMG) em uso de insulina, em uma Maternidade Federal do Estado Rio de Janeiro. Método: Estudo descritivo, quantitativo, transversal e documental, constituído de 126 prontuários. A coleta de dados foi realizada de março a outubro de 2020. Resultados: A amostra teve maior percentual (57,94%) do DMG com necessidade de uso de insulina em mulheres jovens, não tabagistas (94,44%), nem etilistas (92,06%), sedentárias (84,92%), obesas (65,85%), multíparas (75,40%), com número mínimo de 6 consultas de pré-natal recomendado pelo Ministério da Saúde e, cesariana como principal via de nascimento (74,61%). Houve presença de comorbidades associadas à DMG (52,38%), mas com baixo percentual de complicações durante a gestação (23,81%) e ausência de natimortalidade. Conclusão: Faz-se necessário que mais estudos sejam realizados na unidade, com o intuito de desvelar mais fatores associados ao perfil de gestantes com DMG e a realização de cesarianas.

DESCRIPTORES: Diabetes Gestacional; Gravidez de Alto Risco; Complicações na Gravidez; Insulina.

RECEIVED ON: 01/15/2021 APPROVED ON: 02/25/2021

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INTRODUCTION

Gestational Diabetes Mellitus (GDM) is a disease of great gestational impact. It is among the most frequent complications of this period and has an increasing incidence in recent years. ⁽¹⁾ GDM differs from Diabetes Mellitus (DM) in that it is the hyperglycemia detected for the first time in pregnancy, being less definitive than DM type I and type II because of the potential for disappearance after delivery. ⁽²⁾ It is worth mentioning that we are the country that occupies the fourth place in the ranking of the highest rates of adults with DM.

Currently, the prevalence of GDM in the Unified Health System (SUS - Sistema Único de Saúde) is approximately 18%. ⁽³⁾ In addition, it is estimated that one in six births occurs in women with some type of hyperglycemia during pregnancy, among which, GDM is present in 84% of cases. ⁽⁴⁾

DM is defined by a metabolic disorder, in which hyperglycemia and disturbances in the metabolism of carbohydrates, proteins and fats occur, causing a deficiency in the secretion and/or action of insulin. ⁽²⁾ Having different classifications, among them, type I DM in which there is absolute insulin deficiency; Type II DM described as a deficiency related to the action of insulin; DM diagnosed during pregnancy when the pregnant woman without a previous diagnosis of DM has hyperglycemia during pregnancy that meets the criteria for DM in adults according to criteria established by the World Health Organization (WHO) and the GDM in fact. ⁽²⁻⁴⁾

It is believed that the main risk factor for the onset of type II DM and meta-

bolic syndromes in women, is due to the previous obstetric history of GDM. In this way, the GDM establishes an expressive problem that can compromise the woman's health, in addition to the gestational period. In addition to the risk of unfavorable perinatal outcomes, the high risk of developing the disease in the future and increasing its prevalence, accom-

panied by the growing obesity epidemic, observed in several countries. ⁽⁵⁾

Studies show that around 5 to 18% of pregnant women worldwide, who have a diagnosis of GDM, need adequate care so that blood glucose levels remain controlled in order to decrease the risk of macrosomia and other effects in long term for mothers and their children. ⁽⁵⁻⁶⁾

Thus, the adequate control of maternal glycemia increases the chances of a good prognosis for mother and baby due to the ability to lead to a live newborn, with adequate growth, at term and without respiratory and metabolic disorders resulting from maternal hyperglycemia. ⁽⁷⁾

Given the context of the importance of maintaining maternal glycemic control in the presence of GDM, as well as its prevention, this study aims to describe the sociodemographic and obstetric profile of women in the presence of Gestational Diabetes Mellitus using insulin, accompanied by a Federal Maternity Hospital of the State of Rio de Janeiro.

METHOD

This is a descriptive, cross-sectional and documentary study, with a quantitative approach. ⁽⁸⁾ The sample comprised data records of women diagnosed with GDM and insulin-based treatment during prenatal care and maintained care follow-up (prenatal, delivery and postpartum) in the year 2019 (January to December) from a Federal Maternity Hospital in the State of Rio de Janeiro, the unit where the study was conducted. This unit is a specialized institution that has outpatient and hospital assistance, which offers care to pregnant women and

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high-risk newborns. In this study, there were no exclusion criteria.

Data collection started after approval by the institution's Ethics and Research Committee (CAAE 26332119.2.0000.5275). 126 maternal medical records were selected

for this study and 192 medical records were excluded because they did not meet the selection criteria. Data collection was carried out from March to October 2020.

A data collection instrument was built by the researcher, divided into I- Socio-

demographic characteristics of women with GDM and II- Obstetric characteristics of women with GDM, containing 26 variables in the present study.

For data analysis, the software Statistical Package for Social Sciences (SPSS) version 24 was used. To answer the objectives of this study, descriptive statistics were performed with discrimination of absolute and relative frequencies, presented through tables.

With regard to ethical aspects, this research respected the norms established by Resolution No. 466 of December 12th, 2012 of the Ministry of Health, for conducting research involving human beings, which include bioethical references, such as: autonomy, non-maleficence, equity, justice and beneficence, which provide the rights and duties that concern the scientific community, the State and the research subjects.⁽⁹⁾

Thus, since it is a non-interventionist study in which data from institutional information systems and patient records were used, bearing in mind that the data were handled and analyzed anonymously and without nominal identification of the research participants, the Ethics and Research Committee was asked to waive the Free and Informed Consent Term through Plataforma Brasil.

RESULTS

It was observed that of the 126 women who made up the study sample, 97,62% were Brazilian, 57,94% were between 20 and 34 years old, 44,44% were single, 46,82% declared themselves brown, 46,03 % had completed high school and incomplete higher education, 61,11% had paid employment, 94,44% were not smokers, 92,06% were not alcoholics and 96,03% did not use illicit drugs and, 84,92 % were not engaged in physical activities. (Table 1).

In addition, 75,40% of women were multiparous, 65,88% were classified as having pre-gestational obesity BMI, and 69,84% had a final BMI of obesity. In the postpartum period, 33,33% underwent a

Table 1: Description of the Sociodemographic Characteristics of women with GDM

		N	%
Nationality	Brazilian	123	97,62
	Others	3	2,38
Age group	20 to 34 years	73	57,94
	35 years or more	53	42,06
Marital Status	Single	56	44,44
	Married	50	39,69
	Divorced	2	1,59
	Stable Union	9	7,14
Color and Race	No registry	9	7,14
	White	37	29,37
	Black	26	20,63
	Brown	59	46,82
	Yellow	2	1,59
Education	No registry	2	1,59
	Uneducated and incomplete elementary	16	12,7
	Complete elementary school and incomplete high school	33	26,19
	Complete high school and incomplete higher education	58	46,03
	Higher education	6	4,76
Occupation	No registry	13	10,32
	Employment with remuneration	77	61,11
	Without remuneration	42	33,33
Smoker	No registry	7	5,56
	No	119	94,44
	Yes	6	4,76
Consumes Alcohol	No registry	1	0,8
	No	116	92,06
	Yes	9	7,14
Illicit drugs	No registry	1	0,8
	No	121	96,03
	Yes	4	3,17
Physical activity	No registry	1	0,8
	No	107	84,92
	Yes	10	7,94
	No registry	9	7,14

Table 2: Description of obstetric characteristics of women with GDM

		N	%
Parity	Primiparous	31	24,6
	Multiparous	95	75,4
Classification of Pre-gestational BMI	≥18,5 and < 24,9 - Adequate	4	3,17
	≥ 25 and < 29,9 - Overweight	39	30,95
	≥ 30 - Obesity	83	65,88
No. of prenatal consultations	< 6 consultations	27	21,43
	≥ 6 consultations	97	76,98
Beginning of prenatal care	No registry	2	1,59
	1st quarter	34	26,98
	2nd quarter	60	47,62
	3rd quarter	32	25,4
Gestational age at diagnosis of GDM	1st quarter	3	2,38
	2nd quarter	64	50,8
	3rd quarter	58	46,02
Type of insulin	No registry	1	0,8
	Regular	5	3,97
	NPH	73	57,93
	Others	1	0,8
Comorbidities present in pregnancy in addition to GDM	Regular and NPH	47	37,3
	No	60	47,62
	Yes	66	52,38
	Hypertension	39	30,95
Which comorbidities?	Hypothyroidism	11	8,73
	Pulmonary diseases	2	1,59
	Hypertension and Hypothyroidism	6	4,76
	Neuropathies and others	1	0,79
	Does not apply	60	47,62
Maternal complications during pregnancy	Other diseases	7	5,56
	No	96	76,16
	Yes	30	23,81
	Glycemic control	6	4,76
What complications?	Preeclampsia / Eclampsia / Pressure Elevation	18	14,29
	Others	6	4,76
	Glycemic control and Pre-eclampsia / Eclampsia / Elevated blood pressure	4	3,17
	Does not apply	92	73,02

Table 2: Description of obstetric characteristics of women with GDM (continued)

		N	%
Way of delivery	Cesarean section	70	55,56

reassessment of blood glucose from the 6th week on, and 19,85% had fasting blood glucose and/or an oral test with 75g of normal glucose.

With regard to prenatal care, 76.98% underwent 6 or more prenatal consultations, 47,62% started prenatal care only in the 2nd trimester, 50,80% were diagnosed as GDM in the 2nd trimester, and the majority (57,93%) used NPH insulin in isolation.

Just over half (52,38%) of the pregnant women had comorbidities present during pregnancy, in addition to GDM, the most frequent being arterial hypertension with 30,95%. A percentage of 23,81% had maternal complications during pregnancy, where 14,29% were due to disorders related to increased blood pressure. It is worth mentioning that there were no fetal deaths in the studied sample and 91,27% of births occurred in the estimated period for birth (at term).

The most frequent way of delivery was cesarean with 74,61%. Normal delivery (better known as transpelvic in the unit) had a rate of 25,39%, being 18,25% after induction, that is, the pregnant woman did not go into labor spontaneously. Oxytocin in the postpartum period was performed in 92,86%. (Table 2)

DISCUSSION

Sociodemographic characteristics of women with GDM

According to the data in Table 1, from the sample studied, it was observed that more than half of the women (57,94%) were aged between 20 and 34 years old. This data is equivalent to a study that assessed the prevalence of this factor in the outcomes of Hypertensive Pregnancy Disorder (HPD) and GDM. ⁽¹⁰⁾ According to the Ministry of Health (MH), hyperglycemia in pregnancy comes with advancing age and in women over 35 years of age. ⁽⁴⁻¹¹⁾

Regarding marital status, in this study, 46.83% of women had a partner. Another study that assessed the

Way of delivery	Transpelic	9	7,14
	Cesarean section with induction	24	19,05
	Transpelic with induction	23	18,25
Postpartum oxytocin	No	0	0
	Yes	117	92,86
Fetal death	No registry	9	7,14
	No	126	100
Gestational age of childbirth	Yes	0	0
	Pre-term	11	8,73
Blood glucose reassessment from the 6th week after delivery	Term	115	91,27
	Yes	42	33,33
	No registry	84	66,67
Fasting blood glucose and/or Oral Test with 75g of glucose	Normal	25	19,85
	Altered fasting glucose	8	6,35
	Glucose intolerance	4	3,17
	Diabetes Mellitus	3	2,38
	No registry	86	68,25

profile and knowledge about GDM also showed an important percentage of women with partners (75%). In this same study, all women had some degree of schooling, while in the present study 12,70% declared themselves without education and/or incomplete elementary school. ⁽¹²⁾ Thus, it is worth emphasizing the importance of the level of education, considering that low education can significantly compromise adherence to treatment due to the difficulty of reading and understanding the prescription, increasing health risks. ⁽¹³⁾

When analyzing the self-declared skin color, a predominance of 69,04% of women who declared themselves to be non-white was observed, while other studies have demonstrated the prevalence of GDM in white women. ⁽¹²⁻¹⁴⁾ In this research, 61,11% of women had paid employment in the current pregnancy and 11,9% and 3,17% used legal and illegal drugs, respectively, during pregnancy.

Furthermore, the present study showed that most women (84,92%) did not practice physical activity. It is worth emphasizing the importance of physical activity, since in the absence of contraindications, this practice is favorable, as it

reduces blood glucose and contributes significantly to the reduction of excessive maternal weight gain. ⁽¹²⁾

Obstetric and clinical data

Table 2 demonstrated that 75,40% of women were considered multiparous, here, classified with at least one delivery in a previous pregnancy. ⁽¹⁵⁾ A study that evaluated gestational diabetes in a SUS population showed that the occurrence of GDM in multiparous women is twice as high when comparing primiparous women. ⁽¹⁶⁾

Regarding BMI, 96,83% of women were overweight and obese, corroborating this finding in a study that compared the obstetric outcomes of pregnant women with and without GDM demonstrated that the majority of the sample studied were overweight and obese. ⁽¹⁷⁾ Such data are in agreement with others in the literature, which affirm overweight and obesity as risk factors for the development of GDM. ⁽¹¹⁻¹⁸⁾

High-risk prenatal care has the main objective of significantly reducing the risks and possible adverse consequences that pregnant women are exposed to during pregnancy. ⁽¹⁹⁾ Thus, the MS recom-

mends a minimum of six prenatal consultations. ⁽²⁰⁾ In addition, in this study it was possible to identify that 76,98% of pregnant women had the number of consultations greater than or equal to that recommended by the Ministry of Health.

Although there is no consensus among international medical societies, the Brazilian Diabetes Society (SBD - Sociedade Brasileira de Diabetes), together with the Brazilian Federation of Gynecology and Obstetrics Associations (FEBRASGO - Federação Brasileira das Associações de Ginecologia e Obstetrícia), with PAHO and MH, regarding the standardization of screening, a joint proposal was established to standardize the screening and diagnosis of GDM in the country. ⁽¹⁸⁾

According to the literature presented, adding a study that aimed to assess the prevalence of GDM and compare the obstetric and perinatal results, such a study demonstrated the prevalence of the diagnosis of GDM in the second trimester of pregnancy, thus, in the present study there was agreement with such a study for demonstrating that the majority of the diagnostics of GDM occurred in the second trimester of pregnancy. ⁽¹⁾

After the diagnosis of GDM, a change in lifestyle (physical activity and individualized diet) is necessary in order to achieve more satisfactory glycemic goals. When these measures alone are not sufficient to achieve this goal, the use of insulin therapy as the treatment of choice is indicated. Thus, the most widely used and available human insulins in SUS are the intermediate-acting Neutral Protamine Hagedorn (NPH) insulin, and the regular fast-acting insulin. ⁽²⁻⁷⁾ Therefore, in this study there was a prevalence of NPH insulin in isolation (57,93%), however there was an association of Regular insulin and NPH in 37,30% of patients.

It was also observed that 52,38% of pregnant women had some comorbidity during pregnancy in addition to GDM, of which 30,95% were Chronic Arterial Hypertension (CAH) and 8,73% were hypothyroidism. Such data corroborate with a study in São Paulo that identified

the predominance of hypertension as a pre-existing disease in pregnant women, including a considerable number referring to hypothyroidism. ⁽²¹⁾

It should also be noted that maternal complications during pregnancy were identified in 23,81% of pregnant women. Among these, the prevalence of 14,29% related to Hypertensive disorders of pregnancy (HDsP) and only 4,76% related to glycemic control. A study on the relationship between hypertension and GDM, highlights that GDM is associated with maternal complications such as: hypertension induced by pregnancy, increased cesarean sections and neonatal complications. It is worth mentioning that the relatively high glycemic values can cause risk for both the pregnant woman and the baby. ⁽²²⁾

In this study, normal delivery (better known as transpelvic in the unit) had a rate of 25,39%, with 18,25% after induction. However, pregnant women with adequate glycemic control can wait for the evolution of spontaneous delivery. ⁽¹⁵⁾ Although the indication of the mode of delivery is an obstetric recommendation, it is worth mentioning that the GDM is not an absolute indication for cesarean section. It can be performed electively by inducing labor or cesarean delivery when there is a maternal or fetal indication. ⁽²³⁾

The rate of cesarean section, in this study, was 74,61%, including deliveries that went through the induction process (19,05%) in which the cervix was prepared through the use of misoprostol,

but which had an outcome the cesarean section. Other studies have shown that the number of cesarean sections in these cases is still higher when compared to normal delivery. ^(17,19-24)

In addition, the WHO recommends the use of uterotonics to all parturients during the third stage of childbirth, in order to prevent postpartum hemorrhage. It is recommended to use oxytocin intramuscularly as the first choice uterotonic, therefore, in this study it was observed that 92,86% of patients used this drug. ⁽²⁵⁾

With regard to fetal death, a study carried out in Ecuador found that the highest number of fetal deaths and neonatal mortality occurs more frequently in women with gestational diabetes when compared to those without gestational diabetes. ⁽²⁶⁾ However, in the sample of this study there were no fetal deaths, such data corroborate with the study that compared the maternal-fetal outcomes of pregnant women with and without GDM. ⁽¹⁷⁾

Regarding gestational age, in this study most births took place at term, with only 8,73% premature births. Such data are similar to studies that demonstrate the reduction of premature delivery in the presence of GDM. The reduction in premature births observed may be due to the feasibility of early diagnosis of GDM, high-risk prenatal care and the high number of consultations. ⁽¹⁷⁻²⁴⁾

According to the literature, most women show normal blood glucose values after delivery. However, the incidence of type 2 DM and/or glucose intoleran-

ce varies from 3 to 65%. Therefore, it is extremely important to reevaluate blood glucose six weeks after delivery, using OGTT with 75g of glucose in situations of financial viability, as it is a test considered the gold standard for the diagnosis of DM after pregnancy. ⁽¹⁵⁻⁴⁾ In view of this, in this research it was identified that only 33,33% of the parturients returned for evaluation six weeks after delivery. Such data demonstrate that the reassessment of women with GDM after childbirth is still low, corroborating what is reported in the literature. ⁽⁴⁾

CONCLUSION

The present study brought as a relevant aspect the sociodemographic and obstetric profile of women diagnosed and treated, in a school maternity hospital in RJ, with GDM, where a higher percentage of GDM with the need to use insulin was identified in non-white, young, multiparous women, with pre-gestational obesity BMI, presence of associated comorbidities and cesarean sections as the main route of births. These pregnant women, on the other hand, had an adequate number of prenatal consultations, absence of stillbirths and a low rate of health complications during pregnancy.

In view of these data, it is necessary that more studies be carried out in the unit, in order to explore, in greater depth, the factors associated with the diagnosis of GDM and the performance of cesarean sections. ■

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