

# ANALYSIS OF THE BIRTH CONDITIONS OF MACROSOMIC NEWBORNS TO MOTHERS WITH GESTATIONAL DIABETES MELLITUS

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## ABSTRACT

**OBJECTIVE:** To analyze the birth conditions of macrosomic babies born to mothers with gestational diabetes *mellitus* (GDM). **METHODOLOGY:** This is a descriptive and quantitative field study conducted in a pediatric outpatient clinic in the municipality of Anápolis, where the medical records of macrosomic children enrolled between 2020 and 2022 whose mothers had GDM were analyzed. **RESULTS:** A total of 520 medical records were analyzed. Only two records met the research criteria. The average weight of the newborns was 4350 g, both were born by cesarean section, and only one presented the main complications associated with fetal macrosomia, namely uncontrolled blood pressure and respiratory distress. **CONCLUSION:** Despite its low incidence, fetal macrosomia due to gestational diabetes is associated with maternal and fetal morbidity and mortality. However, due to the small sample size, further studies on fetal macrosomia are needed.

**Keywords:** Gestational Diabetes; Fetal Macrosomia; Pregnancy Complications; Perinatal Care.

## INTRODUCTION

A macrosomic newborn (MN) is defined as one weighing more than 4000g-4500g, with weight assessed according to gestational age (GA). The weight of the newborn (NB) in the first hour after birth represents the nutritional status of the NB and the pregnant woman, being an indicator of individual health, as well as an indicative and predictive factor of great influence on the growth and development of the child (RODRIGUES *et al.*, 2004).

A fetus with a weight above the 95th percentile in relation to its GA is considered macrosomic (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2011). As one of the most frequent causes of (MN), gestational diabetes *mellitus* (GDM) is associated with a 2.1 times higher risk of fetal macrosomia (ALBERICO *et al.*, 2014), with macrosomia being the most common adverse outcome of pregnancies

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complicated by GDM (AMORIM *et al.*, 2009; ALMEIDA *et al.*, 2017). Therefore, macrosomia and gestational diabetes mellitus resulting from GDM is a complication associated with several other neonatal complications, such as an increase in the number of indications for operative delivery and an increase in the risk of morbidity and mortality. Considering the importance of effective and safe birth planning in order to avoid complications for the mother and child, the present study aimed to identify the birth conditions of macrosomic babies whose mothers had gestational diabetes mellitus and to analyze the characteristics and events that are most prevalent during birth.

In this sense, the present study aimed to identify the birth conditions of macrosomic babies whose mothers had gestational diabetes *mellitus* and to analyze which characteristics and events are most prevalent during birth.

## **METHOD**

The researchers collected data by analyzing medical records from a pediatric outpatient clinic located in the municipality of Anápolis, the Children and Adolescent Outpatient Clinic (ACA). Medical records from 2020, 2021, and 2022 were analyzed.

The following data were evaluated: regarding the registration number, sex, APGAR at the first and fifth minute, type of delivery, complications during delivery, length, head circumference, chest circumference, weight and size at birth, number of prenatal consultations, whether there was GDM during pregnancy and complications during pregnancy, were allocated to a data collection form and subsequently organized in an Excel® spreadsheet for statistical analysis.

Macrosomic children enrolled in the outpatient clinic between 2020 and 2022 whose mothers had gestational diabetes *mellitus* were included in the study. Medical records with incomplete data, mothers under 18 years of age, and mothers who already had diabetes before pregnancy were excluded from the study.

The medical records were handled in a specific location designated by the outpatient clinic manager to ensure maximum privacy for participants.

This study was approved by the Research Ethics Committee (CAAE 69901223 0 0000 5076).

## RESULTS

A total of 520 medical records were analyzed. 118 records were excluded because they were incomplete. In total, two medical records were found of mothers who had gestational diabetes (GDM) whose children had fetal macrosomia, corresponding to 0.38% of the sample surveyed.

The birth weights were 4025 g and 4675 g. The average weight of newborns whose mothers had GDM was 4350 g. For better statistical analysis, they were named G1 and G2, respectively.

Both newborns were registered at the outpatient clinic at 1 month of age, were male, and were born at term, at 39 and 41 weeks. Regarding the type of delivery, both children were born by cesarean section. The length (L) at birth was 49 cm for G1 and 53 cm for G2. The head circumference (HC) was 36 cm for G1 and 38 cm for G2. The number of prenatal consultations was not reported for either child, which made it difficult to assess the effectiveness of prenatal care in these cases. The data described above can be found in Table 01 below.

**Table 01.** Data on macrosomic newborns

	SEX	Age at registration	No. of prenatal consultations	Birth weight	DELIVERY	APGAR 1st min	APGAR 5 min	I G	C	P C	P T
G1	M	1 month	-	4025g	Cesarean	8	9	39	56	3	-
G2	M	1 month	-	4675g	Cesarean	5	5	41	38	3	-

SOURCE: AZEVEDO, 2024

KEY: M male; GA gestational age; L length; CP head circumference; TC chest circumference; "-" not mentioned in the medical records.

Regarding the chest circumference (PT), the value was not reported for any of the GIG newborns. It is worth noting that of all 520 medical records analyzed, only one had the PT described.

Regarding the evaluation parameters, G1 presented APGAR 8 and 9, and G2 presented APGAR 5 and 5 at 1 and 5 minutes. In addition, the G2 newborn presented the following complications during delivery: “increased blood pressure in the mother” and “respiratory distress in the newborn,” a condition consistent with the literature on the main complications of GIG newborns born to mothers with GDM. The G1 newborn did not present any complications.

Furthermore, none of the medical records mentioned whether insulin was required during pregnancy and, if so, what the dosage regimen was.

## **CONCLUSION**

Fetal macrosomia resulting from gestational diabetes *mellitus* (GDM), despite its low incidence and small sample size, is associated with fetal morbidity and suffering. Close prenatal monitoring of women is necessary to ensure effective risk assessment and prevent complications. In addition, due to the small sample size, further studies on GDM and its influence on the birth conditions of newborns are needed.

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