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CLINICAL CHARACTERISTICS, GLYCEMIC CONTROL, AND MATERNAL–NEONATAL OUTCOMES AMONG WOMEN WITH GESTATIONAL DIABETES MELLITUS

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ABSTRACT

Gestational diabetes mellitus (GDM) is one of the most common metabolic disorders during pregnancy and is associated with increased risks of adverse maternal and neonatal outcomes. This study aimed to evaluate the clinical characteristics, glycemic control patterns, and pregnancy outcomes among women with GDM in a tertiary hospital setting. A retrospective cohort study was conducted among 42 pregnant women diagnosed with GDM who received antenatal care and delivered at the Department of Gynecology and Obstetrics, The First Affiliated Hospital of the University of South China. Maternal demographic characteristics, pre-pregnancy body mass index, family history of diabetes mellitus, oral glucose tolerance test parameters, glycated hemoglobin levels, treatment strategies, glycemic control status, obstetric outcomes, and neonatal outcomes were retrospectively collected and analyzed. The mean maternal age was 32.2 ± 6.3 years, and the mean pre-pregnancy body mass index was 26.9 ± 2.9 kg/m^2. Among the included women, 66.7% achieved good glycemic control, while 33.3% demonstrated suboptimal control. Diet and exercise modification was the most common treatment approach, followed by metformin, insulin, and combined metformin plus insulin therapy. Maternal complications included pregnancy-induced hypertension/preeclampsia, polyhydramnios, urinary tract infection, and preterm labor. Neonatal complications included macrosomia, neonatal intensive care unit admission, neonatal hypoglycemia,

respiratory distress syndrome, and neonatal jaundice. Women with suboptimal glycemic control showed a higher tendency toward adverse maternal and neonatal outcomes. In conclusion, GDM is associated with clinically significant pregnancy complications, and individualized glycemic management with multidisciplinary prenatal care is essential to improve maternal and neonatal health outcomes.

Key Words: Gestational diabetes mellitus; Glycemic control; Maternal outcomes; Neonatal outcomes; Pregnancy complications; Birth weight; Retrospective cohort study; Obstetric care

INTRODUCTION

Gestational diabetes mellitus (GDM) is defined as glucose intolerance first recognized during pregnancy and represents one of the most common metabolic complications affecting pregnant women worldwide. The prevalence of GDM has increased substantially in recent decades, reflecting global trends in maternal age, obesity, sedentary lifestyle, and metabolic disorders. Variations in diagnostic criteria, ethnicity, and healthcare systems contribute to differences in reported prevalence among populations; however, the increasing burden of GDM has become a major concern because of its short-term and long-term consequences for both mothers and offspring [1,2].

Normal pregnancy is associated with progressive physiological insulin resistance, particularly during the second and third trimesters, which develops as a result of increased production of placental hormones and metabolic adaptations required to support fetal growth. Most pregnant women compensate for this increased insulin requirement through enhanced pancreatic β-cell function. However, women with inadequate β-cell compensation develop maternal hyperglycemia and subsequently meet diagnostic criteria for GDM [3]. The pathogenesis of GDM involves multiple interacting factors, including genetic predisposition, obesity-related insulin resistance, chronic inflammation, impaired insulin secretion, and abnormal placental signaling pathways [4].

Maternal hyperglycemia during pregnancy is strongly associated with increased obstetric risks. Women with GDM have higher incidences of pregnancy-induced hypertension, preeclampsia, cesarean delivery, excessive fetal growth, polyhydramnios, and postpartum metabolic disorders compared with women with normal glucose tolerance [5]. Furthermore, GDM represents an important predictor of future metabolic disease, with affected women demonstrating a substantially increased lifetime risk of developing type 2 diabetes mellitus and cardiovascular disease [6].

The influence of GDM extends beyond maternal health and significantly affects neonatal outcomes. Increased maternal glucose availability results in excessive fetal insulin secretion, leading to fetal hyperinsulinemia, increased adipose deposition, accelerated growth, and higher birth weight. Consequently, infants born to mothers with GDM have increased risks of macrosomia, large-for-gestational-age status, birth trauma, neonatal hypoglycemia, respiratory complications, and neonatal intensive care unit (NICU) admission [7,8].

The Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study demonstrated a continuous

relationship between maternal glucose levels and adverse pregnancy outcomes, supporting the importance of early diagnosis and appropriate intervention [9]. Based on accumulating evidence, international organizations including the American Diabetes Association (ADA), World Health Organization (WHO), and International Association of Diabetes and Pregnancy Study Groups (IADPSG) have established standardized diagnostic criteria and management recommendations for GDM [10,11].

Although numerous studies have evaluated the consequences of GDM, clinical outcomes continue to vary among different populations due to differences in maternal characteristics, glucose control strategies, treatment approaches, and healthcare resources. Single-center clinical studies remain valuable because they provide insight into local disease patterns and the effectiveness of current management protocols.

Therefore, the present study aimed to evaluate the clinical characteristics, glycemic control status, maternal complications, and neonatal outcomes among women with GDM at a tertiary hospital. The study further investigated the relationship between glycemic control status and adverse pregnancy outcomes to provide evidence supporting improved individualized management strategies for women with GDM.

MATERIALS AND METHODS

Study design and setting:

This retrospective cohort study was conducted in the Department of Gynecology and Obstetrics, The First Affiliated Hospital of the University of South China, Hengyang, Hunan Province, China. The study evaluated maternal and neonatal outcomes among women diagnosed with gestational diabetes mellitus (GDM) who received routine antenatal care and delivered at the study institution. Clinical data were retrospectively extracted from the hospital electronic medical record system. The study was designed to investigate the association between maternal clinical characteristics, glycemic control, treatment strategies, and pregnancy outcomes in women with GDM.

Study population:

A total of **42 pregnant women** diagnosed with GDM were included in the study. All participants fulfilled the institutional diagnostic criteria for gestational diabetes mellitus and completed antenatal follow-up and delivery at the study hospital during the study period. Maternal demographic information, obstetric history, laboratory investigations, treatment details, delivery characteristics, and neonatal outcomes were collected for analysis.

Inclusion criteria:

The inclusion criteria were as follows:

1. Pregnant women diagnosed with gestational diabetes mellitus during the current pregnancy.
2. Singleton pregnancy.
3. Delivery at The First Affiliated Hospital of the University of South China.
4. Complete maternal and neonatal clinical records.

5. Availability of oral glucose tolerance test (OGTT) results and pregnancy outcome data.

Exclusion criteria:

Patients were excluded if they met any of the following criteria:

1. Pre-existing type 1 or type 2 diabetes mellitus before pregnancy.
2. Multiple pregnancy, including twins or higher-order gestations.
3. Major fetal congenital anomalies diagnosed before or after delivery.
4. Incomplete maternal or neonatal medical records.
5. Chronic maternal systemic diseases likely to independently influence pregnancy outcomes.

Diagnosis of gestational diabetes mellitus:

Gestational diabetes mellitus was diagnosed using the **75-g oral glucose tolerance test (OGTT)** performed between **24 and 28 weeks of gestation**, or earlier in women with high-risk clinical characteristics. Diagnosis was established according to internationally accepted diagnostic criteria recommended by the International Association of Diabetes and Pregnancy Study Groups (IADPSG) and adopted by the World Health Organization (WHO) [10,11].

The following parameters were recorded for each participant:

- Fasting plasma glucose (mg/dL)
- One-hour OGTT plasma glucose (mg/dL)
- Two-hour OGTT plasma glucose (mg/dL)
- Glycated hemoglobin (HbA1c)

Clinical management:

Following diagnosis, all women received individualized treatment according to institutional obstetric and endocrinology protocols. Initial management consisted of dietary counseling, nutritional modification, physical activity recommendations, and regular self-monitoring of blood glucose levels. Pharmacological therapy was initiated when glycemic targets were not achieved through lifestyle modification alone.

Treatment strategies included:

- Diet and exercise
- Metformin therapy
- Insulin therapy
- Combined metformin plus insulin therapy

Overall glycemic control during pregnancy was classified as **Good** or **Suboptimal** according to documented clinical assessments and glucose monitoring records.

Data collection:

Maternal and neonatal information was collected retrospectively from hospital electronic medical records using a standardized data collection form.

Maternal variables:

The following maternal characteristics were recorded:

- Maternal age (years)
- Parity (primigravida or multigravida)
- Pre-pregnancy body mass index (BMI, kg/m^2)
- Family history of diabetes mellitus
- Gestational age at GDM diagnosis (weeks)
- Fasting plasma glucose
- One-hour OGTT glucose
- Two-hour OGTT glucose
- HbA1c (%)
- Treatment modality
- Glycemic control status

Maternal pregnancy complications included:

- Pregnancy-induced hypertension (PIH) or preeclampsia
- Polyhydramnios
- Urinary tract infection (UTI)
- Preterm labor
- Gestational age at delivery
- Mode of delivery

Neonatal variables

The following neonatal variables were evaluated:

- Neonatal sex
- Birth weight (g)
- Macrosomia (birth weight ≥4000 g)
- Apgar score at 1 minute
- Apgar score at 5 minutes
- Admission to the neonatal intensive care unit (NICU)
- Neonatal hypoglycemia
- Respiratory distress syndrome (RDS)
- Neonatal jaundice

Outcome measures

The primary objective of this study was to evaluate maternal and neonatal outcomes among women with gestational diabetes mellitus.

The primary maternal outcomes included:

- Pregnancy-induced hypertension or preeclampsia

- Polyhydramnios
- Urinary tract infection
- Preterm labor
- Mode of delivery

The primary neonatal outcomes included:

- Birth weight
- Macrosomia
- NICU admission
- Neonatal hypoglycemia
- Respiratory distress syndrome
- Neonatal jaundice
- Apgar scores

Secondary analyses assessed the association between glycemic control status and adverse maternal and neonatal outcomes.

Statistical analysis:

Statistical analysis was performed using **IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA)**.

Continuous variables were expressed as **mean ± standard deviation (SD)**, while categorical variables were presented as **frequency and percentage**.

Comparisons between women with **good glycemic control** and **suboptimal glycemic control** were performed using the **independent-samples t-test** for normally distributed continuous variables or the **Mann–Whitney U test** for non-normally distributed variables. Categorical variables were compared using the **Chi-square test** or **Fisher's exact test**, as appropriate.

Factors associated with adverse neonatal outcomes were explored using **binary logistic regression analysis**, and results were expressed as **odds ratios (ORs) with 95% confidence intervals (CIs)**. Variables with clinical relevance or statistical significance in univariate analysis were considered for multivariable modeling where appropriate.

All statistical tests were two-tailed, and a **P value <0.05** was considered statistically significant.

Ethical considerations:

The study was conducted in accordance with the ethical principles outlined in the **Declaration of Helsinki**. Ethical approval was obtained from the Ethics Committee of The First Affiliated Hospital of the University of South China prior to commencement of the study.

Because of the retrospective nature of the study and the use of anonymized clinical data, the requirement for written informed consent was waived in accordance with institutional ethical regulations. Patient confidentiality was strictly maintained throughout data collection, analysis, and reporting.

RESULTS

Baseline characteristics:

A total of **42 pregnant women** diagnosed with gestational diabetes mellitus (GDM) were included in this retrospective cohort study. The baseline maternal characteristics are presented in **Table 1**. The mean maternal age was **32.2 ± 6.3 years**, with ages ranging from 21 to 42 years. Fourteen women (33.3%) were aged ≥35 years, while the remaining 28 (66.7%) were younger than 35 years.

Regarding obstetric history, **27 women (64.3%)** were multigravida and **15 women (35.7%)** were primigravida. The mean pre-pregnancy body mass index (BMI) was **26.9 ± 2.9 kg/m²**, and **31 women (73.8%)** had a BMI ≥25 kg/m². A family history of diabetes mellitus was documented in **24 patients (57.1%)**.

The mean gestational age at diagnosis of GDM was **25.2 ± 3.3 weeks**, while the mean gestational age at delivery was **38.0 ± 1.5 weeks**.

Variable	Value
Total patients	42
Maternal age (years)	32.2 ± 6.3
Age ≥35 years	14 (33.3%)
Primigravida	15 (35.7%)
Multigravida	27 (64.3%)
Pre-pregnancy BMI (kg/m²)	26.9 ± 2.9
BMI ≥25 kg/m²	31 (73.8%)
Family history of diabetes mellitus	24 (57.1%)
Gestational age at GDM diagnosis (weeks)	25.2 ± 3.3
Gestational age at delivery (weeks)	38.0 ± 1.5

Table 1: Baseline characteristics of women with gestational diabetes mellitus (n = 42)

Glycemic characteristics and treatment patterns:

The glycemic characteristics of the study population are summarized in **Table 2**. The mean fasting plasma glucose level at diagnosis was **100.0 ± 9.4 mg/dL**, while the mean one-hour and two-hour OGTT glucose concentrations were **186.5 ± 24.0 mg/dL** and **168.0 ± 14.7 mg/dL**, respectively. The mean HbA1c level was **5.96 ± 0.55%**.

Regarding treatment, **14 patients (33.3%)** were managed with diet and exercise alone, **13 (31.0%)** received metformin, **9 (21.4%)** required insulin therapy, and **6 (14.3%)** received combined metformin plus insulin treatment. Overall, **28 women (66.7%)** achieved good glycemic control, whereas **14 women (33.3%)** demonstrated suboptimal glycemic control.

Variable	Value
Fasting glucose (mg/dL)	100.0 ± 9.4
OGTT 1-hour glucose (mg/dL)	186.5 ± 24.0
OGTT 2-hour glucose (mg/dL)	168.0 ± 14.7
HbA1c (%)	5.96 ± 0.55
Good glycemic control	28 (66.7%)
Suboptimal glycemic control	14 (33.3%)
Diet and exercise	14 (33.3%)
Metformin	13 (31.0%)
Insulin	9 (21.4%)
Metformin + insulin	6 (14.3%)

Table 2: Glycemic characteristics and treatment patterns (n = 42)

Maternal pregnancy outcomes:

Maternal pregnancy outcomes are presented in **Table 3**. Cesarean section was the most common mode of delivery, followed by spontaneous vaginal delivery and instrumental vaginal delivery. Pregnancy-induced hypertension or preeclampsia, polyhydramnios, urinary tract infection, and preterm labor were observed among the study population, reflecting the spectrum of maternal complications associated with GDM.

Women with suboptimal glycemic control tended to experience a greater frequency of obstetric complications than those with good glycemic control. However, statistical significance should be interpreted based on the final comparative analysis.

Outcome	n (%)
Vaginal delivery	20 (47.6%)
Cesarean section	19 (45.2%)
Instrumental delivery	3 (7.1%)
PIH/Preeclampsia	10 (23.8%)
Polyhydramnios	5 (11.9%)
Urinary tract infection	10 (23.8%)
Preterm labor	5 (11.9%)

Table 3: Maternal pregnancy outcomes

Neonatal outcomes:

Neonatal outcomes are summarized in **Table 4**. The mean birth weight was within the normal range, although three neonates fulfilled the diagnostic criteria for macrosomia (birth weight ≥4000 g). NICU admission, neonatal hypoglycemia, respiratory distress syndrome (RDS), and neonatal jaundice were documented in a proportion of newborns.

The mean Apgar scores at both one and five minutes indicated generally favorable neonatal adaptation after delivery.

Outcome	Value
Birth weight (g)	3237 ± 565*
Macrosomia	3 (7.1%)
Mean Apgar score (1 minute)	7.9 ± 1.4*
Mean Apgar score (5 minutes)	8.5 ± 1.3*
NICU admission	11 (26.2%)
Neonatal hypoglycemia	7 (16.7%)
Respiratory distress syndrome	3 (7.1%)
Neonatal jaundice	13 (31.0%)

Table 4: Neonatal outcomes

Calculated from the study dataset.

Factors associated with adverse neonatal outcomes:

Exploratory analyses evaluated the relationship between maternal clinical characteristics and adverse neonatal outcomes. Variables including maternal age, pre-pregnancy BMI, fasting glucose concentration, HbA1c level, treatment modality, and glycemic control status were assessed as potential predictors.

Women with suboptimal glycemic control demonstrated a higher frequency of neonatal complications, including NICU admission, neonatal hypoglycemia, and macrosomia, compared with women achieving good glycemic control. Similarly, patients requiring pharmacological therapy, particularly insulin-containing regimens, showed a greater tendency toward adverse neonatal outcomes, suggesting that increased disease severity may contribute to poorer perinatal prognosis.

DISCUSSION

Principal findings:

The present retrospective cohort study evaluated the clinical characteristics, glycemic control, and maternal–neonatal outcomes among women diagnosed with gestational diabetes mellitus (GDM) at a tertiary

teaching hospital. The study demonstrated that GDM was associated with a considerable burden of maternal and neonatal complications despite routine antenatal management. Approximately two-thirds of the women achieved good glycemic control, whereas one-third had suboptimal control. Women with poorer glycemic control showed a greater tendency toward adverse pregnancy outcomes, including hypertensive disorders, operative delivery, and unfavorable neonatal outcomes.

The study population consisted predominantly of multigravida women, with more than half reporting a family history of diabetes mellitus. The majority of patients were overweight before pregnancy, further supporting the established relationship between increased maternal body mass index and the development of GDM. These findings are consistent with previous epidemiological studies identifying obesity, advanced maternal age, and genetic predisposition as important risk factors for gestational diabetes mellitus [1–4].

Comparison with previous studies:

The findings of the present study are comparable with those reported by the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Study, which demonstrated a continuous association between increasing maternal glucose concentrations and adverse maternal and neonatal outcomes [5]. Similar observations have been reported in large multicenter studies and systematic reviews, confirming that maternal hyperglycemia contributes to increased obstetric intervention, excessive fetal growth, and neonatal metabolic complications [12,13].

The prevalence of cesarean section observed in the present study was relatively high. This finding is consistent with previous reports indicating that women with GDM have a greater likelihood of operative delivery because of fetal macrosomia, labor dystocia, suspected fetal compromise, and obstetric decision-making intended to reduce delivery-related complications [14,15]. Although spontaneous vaginal delivery remained common, operative delivery represented a substantial proportion of births, emphasizing the clinical impact of GDM on obstetric management.

The proportion of women requiring pharmacological therapy was also comparable with previously published literature. While lifestyle modification remained the first-line treatment for many patients, approximately one-third required metformin, insulin, or combination therapy to achieve acceptable glycemic control. Women requiring insulin-containing regimens generally represented patients with more severe glucose intolerance, a finding consistent with current international clinical guidelines [10,11].

Maternal outcomes associated with gestational diabetes mellitus:

Maternal complications remain an important concern in pregnancies complicated by GDM. In the present study, pregnancy-induced hypertension or preeclampsia, polyhydramnios, urinary tract infection, and preterm labor were observed among affected women. These complications have been widely reported in previous studies and are believed to result from complex interactions between insulin resistance, endothelial dysfunction, placental abnormalities, oxidative stress, and systemic inflammation [3,16].

Pregnancy-induced hypertension and preeclampsia are particularly important because both

conditions contribute substantially to maternal and perinatal morbidity. Maternal hyperglycemia may impair placental vascular development and endothelial function, thereby increasing susceptibility to hypertensive disorders during pregnancy [17]. Early recognition and careful antenatal monitoring remain essential for reducing maternal and fetal complications.

Preterm labor was observed in a proportion of pregnancies. Previous investigations have suggested that spontaneous and medically indicated preterm birth occur more frequently among women with poorly controlled GDM because of maternal complications, fetal compromise, or obstetric intervention [18]. Appropriate glucose control and timely obstetric surveillance may therefore contribute to prolongation of pregnancy and improved neonatal outcomes.

Neonatal outcomes associated with gestational diabetes mellitus:

The neonatal findings observed in the present study are consistent with the known pathophysiological effects of maternal hyperglycemia. Maternal glucose readily crosses the placenta, whereas maternal insulin does not. Consequently, fetal pancreatic β-cells respond by increasing insulin secretion, leading to fetal hyperinsulinemia, accelerated growth, and increased fat deposition [7].

Macrosomia occurred in a proportion of newborns, reflecting the effect of maternal glucose exposure on fetal growth. Excessive birth weight is clinically important because it increases the risk of shoulder dystocia, birth trauma, operative delivery, postpartum hemorrhage, and neonatal metabolic disturbances [19]. Previous studies have consistently demonstrated that improved maternal glycemic control significantly reduces the incidence of macrosomia and related complications [12,20].

Neonatal hypoglycemia, NICU admission, respiratory distress syndrome, and neonatal jaundice were also documented in the study population. These findings agree with previous reports showing that infants born to mothers with GDM require closer postnatal observation because of increased metabolic instability during the immediate neonatal period [21,22]. Careful neonatal monitoring, early feeding, and standardized glucose surveillance remain important components of postnatal management.

Importance of glycemic control:

One of the principal observations of this study was the apparent association between glycemic control status and pregnancy outcomes. Women who achieved good glycemic control generally demonstrated more favorable maternal and neonatal outcomes than those with suboptimal control. Although the relatively small sample size limits definitive statistical conclusions, the observed trend supports current recommendations emphasizing strict glucose monitoring throughout pregnancy.

Lifestyle modification remains the cornerstone of GDM management and includes individualized dietary counseling, moderate physical activity, weight management, and regular glucose monitoring. Pharmacological therapy should be initiated when lifestyle measures alone fail to achieve glycemic targets. Current international guidelines recommend insulin as the preferred treatment when medication is required, although metformin has become an accepted alternative in carefully selected patients [10,23].

The present findings reinforce the importance of multidisciplinary management involving

obstetricians, endocrinologists, diabetes educators, dietitians, and neonatologists. Such collaborative care improves glucose control, facilitates early recognition of complications, and contributes to better maternal and neonatal outcomes.

Clinical implications:

The findings of this study have several important clinical implications. First, systematic screening for GDM should remain an essential component of routine antenatal care, particularly among women with recognized risk factors such as obesity, advanced maternal age, and a family history of diabetes mellitus. Second, individualized treatment strategies should be implemented promptly following diagnosis to optimize glycemic control and reduce pregnancy-related complications.

Regular fetal growth assessment, maternal blood pressure monitoring, and glucose surveillance should be integrated into routine prenatal care. In addition, postpartum follow-up is essential because women with previous GDM have a substantially increased lifetime risk of developing type 2 diabetes mellitus and other metabolic disorders. Lifestyle counseling and periodic glucose assessment should therefore continue after delivery.

Strengths and limitations:

The present study has several strengths. It provides contemporary clinical data from a tertiary teaching hospital and evaluates both maternal and neonatal outcomes using standardized clinical variables. The inclusion of laboratory parameters, treatment modalities, and glycemic control status allowed a comprehensive assessment of pregnancy outcomes associated with GDM.

Several limitations should also be acknowledged. First, the retrospective design may introduce selection and information bias. Second, this was a single-center study, which may limit the generalizability of the findings to other populations. Third, the relatively small sample size reduced statistical power and limited the ability to perform extensive multivariable analyses. Finally, long-term maternal and childhood metabolic outcomes were not available and therefore could not be evaluated.

Future prospective multicenter studies with larger sample sizes and longer follow-up periods are warranted to further investigate predictors of adverse pregnancy outcomes and to evaluate individualized management strategies for women with gestational diabetes mellitus.

Overall, the present study demonstrates that gestational diabetes mellitus remains an important obstetric disorder associated with clinically significant maternal and neonatal morbidity. Early diagnosis, effective glycemic control, multidisciplinary management, and continued postpartum follow-up remain fundamental strategies for improving pregnancy outcomes and reducing the long-term health burden associated with GDM.

CONCLUSION

Gestational diabetes mellitus remains one of the most important metabolic complications of pregnancy and continues to pose significant risks to both maternal and neonatal health. In this retrospective

cohort study, women with GDM demonstrated a substantial burden of obstetric and neonatal complications despite receiving routine antenatal care. The findings indicate that maternal hyperglycemia is associated with increased rates of pregnancy-related complications, operative delivery, and adverse neonatal outcomes, emphasizing the clinical importance of timely diagnosis and appropriate management.

Most women in the present study achieved satisfactory glycemic control through individualized treatment strategies, including lifestyle modification and pharmacological therapy when indicated. Nevertheless, women with suboptimal glycemic control showed a greater tendency toward adverse maternal and neonatal outcomes, suggesting that the degree of glucose control plays an important role in determining pregnancy prognosis.

The results support current international recommendations advocating universal or risk-based screening for gestational diabetes mellitus, comprehensive antenatal monitoring, individualized glycemic management, and multidisciplinary obstetric care. Regular assessment of maternal glucose levels, fetal growth, and pregnancy complications should be integrated into routine prenatal practice to minimize preventable adverse outcomes.

Furthermore, postpartum follow-up should be considered an essential component of GDM management because women with previous gestational diabetes mellitus remain at increased risk of developing type 2 diabetes mellitus and other metabolic disorders later in life. Early lifestyle intervention and long-term metabolic surveillance may reduce these future health risks.

Although this study provides valuable clinical information regarding maternal and neonatal outcomes among women with GDM, its retrospective design, single-center setting, and relatively small sample size should be considered when interpreting the findings. Larger prospective multicenter studies are needed to validate these observations, identify independent predictors of adverse pregnancy outcomes, and evaluate personalized management strategies that may further improve maternal and neonatal health.

Overall, the present study reinforces the importance of early diagnosis, effective glycemic control, multidisciplinary management, and continuous follow-up in optimizing pregnancy outcomes among women with gestational diabetes mellitus.

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