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Original Article

Increased risk of Ischemic heart disease, hypertension, and type 2 diabetes in women with previous gestational diabetes mellitus: A retrospective cross-sectional study.

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Abstract

Background
Women with gestational diabetes mellitus (GDM) are at increased risk of developing long-term metabolic and cardiovascular complications.
Objective: To assess the incidence of hypertension, type 2 diabetes mellitus (T2DM), and ischemic heart disease (IHD) in women with previous GDM.

Methods
This retrospective cross-sectional study was conducted at Government Medical College and Hospital (GMCH), Purnea, Bihar, over one year. A total of 100 women with a history of GDM were included. Data were collected from hospital records, including age, duration since pregnancy, and occurrence of T2DM, hypertension, and IHD. Statistical analysis was performed using the Chi-square test, with $p<0.05$ considered significant.

Results
The majority of women (45%) were aged 30–40 years. The incidence of T2DM, hypertension, and IHD was 24%, 25%, and 11%, respectively. A statistically significant association was found between duration since GDM and development of T2DM ($p=0.024$), hypertension ($p=0.00015$), and IHD ($p=0.010$).

Conclusion
Women with a history of GDM are at increased risk of metabolic and cardiovascular diseases. Long-term follow-up and early preventive interventions are essential.

Recommendation
Routine screening for diabetes, hypertension, and cardiovascular disease should be implemented in women with prior GDM.

Keywords: *Gestational diabetes, Long-term monitoring, Preventative measures, Type 2 diabetes, Metabolic disorders, Cardiovascular disease*
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Introduction

Glucose intolerance initially identified during pregnancy is known as gestational diabetes mellitus (GDM) (1). It affects 5–15% of pregnancies globally and is one of the most prevalent metabolic abnormalities that complicate pregnancy. Women with prior GDM are still much more likely to acquire type 2 diabetes mellitus (T2DM), hypertension, and cardiovascular disease later in life, even though glucose levels frequently return to normal following delivery (2). Numerous studies have shown that metabolic problems such as insulin resistance, dyslipidemia, and endothelial dysfunction continue after

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pregnancy. These elements raise the chance of developing ischemic heart disease.
The objective of this study was to evaluate the incidence and association of type 2 diabetes mellitus, hypertension, and ischemic heart disease in women with a history of gestational diabetes mellitus.

Methods

Study design

This was a retrospective cross-sectional study.

Study setting

The study was conducted at Government Medical College and Hospital (GMCH), Purnea, Bihar, India, a tertiary care teaching hospital providing outpatient and inpatient services in general medicine, obstetrics and gynecology, and other specialties.

Study duration

The study was conducted over a period of one year, from January 2023 to December 2023.

Study population

A total of 100 women with a documented history of gestational diabetes mellitus were included.

Inclusion criteria

- Women aged ≥18 years
- Documented history of GDM
- Availability of follow-up records

Exclusion criteria

- Pre-existing diabetes before pregnancy
- Pre-existing hypertension or cardiovascular disease

Independent variable

- Duration since GDM

Dependent variables

- Type 2 diabetes mellitus
- Hypertension
- Ischemic heart disease

Data collection tools

A structured data extraction form was used to collect data from hospital records.

Data collection method

Data were collected retrospectively from patient records, including demographic details, clinical history, and documented diagnosis of T2DM, hypertension, and IHD.

Statistical analysis

Data were analyzed using SPSS. Descriptive statistics were used to summarize the data. Associations between variables were analyzed using the Chi-square test. A p-value <0.05 was considered statistically significant.

Results

Table 1: Age distribution

Age Group	Number	Percentage
<30 years	32	32%
30–40 years	45	45%
>40 years	23	23%

Most women were in the 30–40-year age group.

Table 2: Incidence of Type 2 Diabetes after GDM

Type 2 Diabetes	Number	Percentage
Yes	24	24%
No	76	76%

Table 3: Incidence of hypertension

Hypertension	Number	Percentage
Yes	25	25%
No	75	75%

Table 4: Incidence of Ischemic heart disease

IHD	Number	Percentage
Yes	11	11%
No	89	89%

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Table 5: Association between duration since GDM and outcomes

Condition	p-value	Significance
Type 2 Diabetes	0.024	Significant
Hypertension	0.00015	Highly significant
Ischemic Heart Disease	0.010	Significant

The association between duration since GDM and the development of outcomes was assessed using the Chi-square test. A statistically significant association was observed between increasing duration since GDM and the occurrence of type 2 diabetes mellitus (p=0.024), hypertension (p=0.00015), and ischemic heart disease (p=0.010), indicating that the risk of these conditions increases with time after pregnancy. This shows that the risk increases with longer duration after pregnancy.

Discussion

The current retrospective analysis assessed the cardiovascular and metabolic hazards over the long term in women who had previously had gestational diabetes mellitus (3).

According to the study, type 2 diabetes struck 24% of women, which is in line with other research that revealed women with a history of GDM had a markedly higher risk of developing the disease (4). 25% of women had hypertension, underscoring the link between GDM and potential cardiovascular risk factors. This connection is probably influenced by metabolic syndrome and insulin resistance (5).

11% percent of women had ischemic heart disease, indicating that women with a history of GDM may get cardiovascular illness at a younger age than the general population.

Long-term monitoring is crucial because the study also showed that the risk of these disorders rose with longer time after pregnancy (6). According to earlier research, women who have previously had GDM had higher cardiovascular morbidity because of ongoing metabolic abnormalities (7). Future issues may be prevented by early lifestyle treatments such as regular monitoring for diabetes and hypertension, food modification, and physical activity (8).

Conclusion

Type 2 diabetes, hypertension, and ischemic heart disease are all more likely to occur in later life in women with a history of prenatal diabetes mellitus.

The longer the time after pregnancy, the higher the danger. To identify metabolic and cardiovascular disorders early and prevent long-term problems, women with a history of GDM must have routine screening and long-term follow-up.

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Abbreviations

GDM – Gestational Diabetes Mellitus
T2DM – Type 2 Diabetes Mellitus
IHD – Ischemic Heart Disease

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No funding was received for this study.

Conflict of interest

The authors declare no conflict of interest.

Data availability

Data are available from the corresponding author upon reasonable request.

Author contribution

MMA: Data collection and manuscript writing
PP: Study design and supervision

Author biography

Dr. MD. Mujtaba Ashraf is a Senior Resident in the Department of General Medicine at GMCH, Purnea, with an interest in diabetes and cardiovascular research.

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