



Synopsis for Dissertation

**Gestational Diabetes Mellitus (GDM) and its Consequences : A Systemic Review
of Maternal and Neonatal Outcomes and Long- Term Risks for Mothers.**

Submitted by

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Introduction :

Gestational Diabetes Mellitus (GDM) is a condition characterized by glucose intolerance with onset or first recognition during pregnancy. It affects approximately 10-15% of pregnancies worldwide and has significant implications for both maternal and neonatal health. Short-term complications include an increased risk of pre-eclampsia, cesarean delivery, and neonatal hypoglycemia. Long-term, mothers with GDM have a higher likelihood of developing type 2 diabetes (T2DM), while children born to mothers with GDM are at risk of obesity and metabolic disorders. Given these critical implications, this study aims to systematically review the impact of GDM on maternal and neonatal outcomes, as well as the progression of GDM to T2DM in mothers.

Research Question :

What are the short-term and long-term health consequences of Gestational Diabetes Mellitus (GDM) for both mothers and neonates?

Research Objectives :

1. To assess the impact of GDM on maternal health outcomes, including pregnancy complications such as preeclampsia, increased cesarean delivery rates, and postpartum health risks.
2. To evaluate the neonatal consequences of GDM, focusing on outcomes like macrosomia, birth trauma, neonatal hypoglycemia, respiratory distress syndrome, and NICU admissions.
3. To determine the long-term risk of progression from GDM to type 2 diabetes mellitus (T2DM) and other chronic conditions in mothers' post-pregnancy.

Materials and Methods :

- Study Design :Systematic review and published studies on the impact of GDM on maternal and neonatal outcomes and the risk of progression to T2DM following PRISMA guidelines.
- Setting : India review focused on studies conducted in Indian populations.
- Study Population: Pregnant women diagnosed with GDM, and their neonatal outcomes as reported in reviewed studies.
- Inclusion Criteria:
 - Studies on pregnant women diagnosed with GDM.
 - Studies conducted in India.

- Published between 2010-2024.
- Peer reviewed journal articles
- Studies reporting neonatal outcomes related to GDM.
- Studies analyzing long-term maternal outcomes, specifically progression to T2DM.
- Exclusion Criteria:
 - Studies without clear diagnostic criteria for GDM.
 - Studies lacking data on maternal or neonatal outcomes.
 - Case reports and non-peer-reviewed literature, expert opinions and editorials
- Study Tool : Structured literature review using keywords related to GDM and associated outcomes. Manual data extraction of relevant variables was performed.
- Duration of Study : 2.5 months.
- Sampling Technique : Purposive sampling based on predefined inclusion/exclusion criteria and relevance to research objectives.
- Data Collection Method :
 - Databases: PubMed, ResearchGate, Google Scholar.
 - Boolean operators and manual reference checks used to expand search reach.
 - 100 initial articles screened; 15 studies were included for final analysis.
- Operational Definitions :
 - **GDM:** Glucose intolerance first recognized during pregnancy.
 - **Macrosomia:** Neonatal birth weight >4,000 grams.
 - **Type 2 Diabetes Mellitus:** Persistent hyperglycemia diagnosed post-pregnancy following GDM.
 - **NICU Admission:** Need for specialized neonatal care.
 - **Postpartum Dysglycemia:** Abnormal glucose tolerance occurring after delivery.
- Data Analysis : **Narrative synthesis of outcomes reported in the included studies. No statistical software (e.g., SPSS, STATA) was used.**

- Ethical Considerations :

- Ethical approval is not required as this study is based on secondary data. All sources were properly cited and acknowledged.
- The study involves the analysis of publicly available secondary data from the research papers.
- The study does not involve direct participation and therefore does not pose ethical risk to the study population.

- Implications of Research :

Findings from this review emphasize the clinical and public health significance of GDM.

It underlines the need for:

- Universal screening protocols.
 - Postpartum follow-up systems.
 - Integration of GDM care into maternal health policy.
- This study advocates for strategic interventions to break the intergenerational cycle of metabolic disease and improve maternal and child health outcomes in India.

References :

Selected from over 15 peer-reviewed Indian and global sources, including:

- WHO guidelines
- National Family Health Survey (NFHS)
- DIPSI, IADPSG recommendations
- Studies published between 2010 and 2024 on maternal-neonatal health in GDM cases.