

8. ABSTRACT

Introduction: Gestational diabetes mellitus (GDM) is the most common pregnancy complication (8%), characterized by hyperglycemia resulting from pathological homeostatic mechanisms. There's a concerning trend of increasing GDM prevalence. GDM is classified into diet-treated and pharmacologically treated. WHO currently recommends OGTT screening for GDM diagnosis between 24-28 weeks of pregnancy. It's associated with complications like cesarean section, peripartum trauma, increased risk of hemorrhage, diabetes, and future metabolic syndrome. New markers, particularly epigenetic ones, are sought for early detection and enhanced care. miRNA are small non-coding RNA molecules. miR-16-5p affects cell growth regulation and insulin resistance. miR-222-3p regulates insulin levels through estradiol influence and glucose transporters. miR-21-5p impacts insulin regulation and cellular stress.

Objective: The main goal was to investigate the potential role of miRNA (miR-16-5p, miR-222-3p, miR-21-5p) in gestational diabetes and their association with clinical features. The study centered on two main questions: whether these miRNAs play a role in gestational diabetes pathogenesis and if they can serve as diagnostic and monitoring tools. The doctoral thesis aims to improve understanding of gestational diabetes and enhance care for pregnant women and their offspring.

Materials and Methods: The study included 72 pregnant patients, with 42 having gestational diabetes and 30 in the control group. Among GDM patients, some were treated with diet only, while others received insulin. miRNA expression was measured using ELISA.

Results: There were no significant differences in miR-222-3p expression between GDM patients and the control group. In the control group, a positive correlation was found between miR-222-3p expression and preeclampsia. The GDM group exhibited a positive correlation between miR-16-5p expression, BMI, and insulin resistance (HOMA-IR). In the GDM group, a positive correlation was observed between miR-21-5p expression and fasting glucose levels.

Conclusions: Results do not confirm the role of miR-222-3p in GDM pathogenesis or as a diagnostic marker but suggest a role in preeclampsia pathogenesis. Additionally, a role for miR-16-5p in GDM pathogenesis was observed. Furthermore, a potential role for miR-21-5p in monitoring gestational diabetes treatment is indicated.