UNIVERSITY OF HEALTH SCIENCES

COLLEGE OF NURSING

Assessment of Knowledge and Awareness of Pregnant Women Regarding Gestational Diabetes Mellitus and Its Impact on Maternal and Fetal Outcomes

Graduation Research Proposal

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Proposed study site:

Obstetrics and Gynecology Department, Dongola, Northern State, Sudan

Proposed study duration:

One month

pregnant women’s knowledge and awareness regarding gestational diabetes mellitus. The findings may help healthcare providers, especially nurses, improve health education and awareness programs for pregnant women. It may also contribute to promoting early detection and proper management of GDM, thereby helping reduce potential maternal and fetal complications.

5. General Objective

To assess the knowledge and awareness of pregnant women regarding gestational diabetes mellitus and its effects on maternal and fetal health at Dongola Obstetrics and Gynecology Hospital, Northern State, Sudan, 2026.

6. Specific Objectives

- To assess the level of knowledge of pregnant women regarding gestational diabetes mellitus.
- To assess pregnant women's knowledge regarding the definition and nature of gestational diabetes mellitus.
- To assess their knowledge regarding the risk factors associated with gestational diabetes mellitus.
- To assess their knowledge regarding the signs and symptoms of gestational diabetes mellitus.
- To assess their knowledge regarding screening and diagnostic methods for gestational diabetes mellitus.
- To assess their knowledge regarding the management of gestational diabetes mellitus, including diet, physical activity, glucose monitoring and pharmacological treatment.
- To assess their knowledge regarding the maternal complications associated with gestational diabetes mellitus.
- To assess their knowledge regarding fetal and neonatal complications associated with gestational diabetes mellitus.
- To determine the association between pregnant women's knowledge/awareness of GDM and selected sociodemographic characteristics.
- To determine the association between pregnant women's knowledge/awareness of GDM and selected obstetric or pregnancy-related characteristics.

7. Research Questions

1. What is the level of knowledge of pregnant women regarding gestational diabetes

mellitus (GDM) at the Obstetrics and Gynecology Department in Dongola?

2. What is the level of awareness among pregnant women regarding the risk factors and

clinical manifestations of gestational diabetes mellitus?

3. What is the level of knowledge of pregnant women regarding the possible maternal

and fetal complications associated with gestational diabetes mellitus?

4. What is the level of awareness among pregnant women regarding the methods of

prevention, screening, diagnosis, and management of gestational diabetes mellitus?

5. Is there a relationship between pregnant women’s knowledge and awareness of

gestational diabetes mellitus and their sociodemographic characteristics, such as age, educational level, occupation, and parity?

6. What are the main sources of information about gestational diabetes mellitus among

pregnant women attending the Obstetrics and Gynecology Department in Dongola?

CHAPTER TWO

LITERATURE REVIEW

2.1 Definition of Gestational Diabetes Mellitus

Gestational Diabetes Mellitus (GDM) is high blood glucose first recognized during pregnancy. It occurs when the body cannot produce enough insulin to meet the increased needs of pregnancy. GDM may affect both maternal and fetal health **(McIntyre et al., 2019)**.

2.2 Prevalence and Risk Factors

GDM is a common complication of pregnancy. Studies conducted in Khartoum, Sudan, reported prevalence rates ranging from 12% to 18.5% among the studied women. Risk factors include obesity, advanced maternal age, previous GDM, family history of diabetes, previous delivery of a macrosomic baby, and polycystic ovary syndrome (PCOS) **(McIntyre et al., 2019)**.

2.3 Signs and Symptoms

Many women with GDM have no symptoms. Possible symptoms include increased thirst, frequent urination, fatigue, and blurred vision. Therefore, screening is essential for early detection **(McIntyre et al., 2019)**.

2.4 Screening and Diagnosis

GDM screening is usually performed between 24 and 28 weeks of pregnancy. The Oral Glucose Tolerance Test (OGTT) is commonly used for diagnosis. Early detection helps reduce complications **(McIntyre et al., 2019)**.

2.5 Management and Prevention

Management includes a healthy diet, appropriate physical activity, regular blood glucose monitoring, medication when necessary, and antenatal follow-up. Healthy lifestyle practices and appropriate screening help reduce complications **(McIntyre et al., 2019)**.

2.6 Knowledge and Awareness of Pregnant Women

Knowledge of GDM includes understanding its risk factors, symptoms, screening, management, and complications. Healthcare professionals, especially nurses, play an important role in providing accurate health education to pregnant women.

2.7 Maternal and Fetal Outcomes

Maternal outcomes: GDM may increase the risk of preeclampsia, cesarean delivery, and future type 2 diabetes mellitus **(McIntyre et al., 2019; Kaaja & Rönnemaa, 2008)**.

Fetal and neonatal outcomes: Complications may include macrosomia, birth injuries, neonatal hypoglycemia, and respiratory problems. Proper management helps reduce these risks **(McIntyre et al., 2019; Vambergue & Fajardy, 2011)**.

2.8 Role of Nurses

Nurses educate pregnant women about GDM, healthy nutrition, physical activity, blood glucose monitoring, medication use, and regular antenatal visits. They also provide emotional support and encourage adherence to treatment **(McIntyre et al., 2019)**.

2.9 Previous Studies

Previous studies reported different levels of knowledge about GDM **(Alenezi et al., 2025; Mahmood & Khalil, 2023)**.

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Jeddah, Saudi Arabia: 77.8% of participants had poor knowledge, while 6.1% had good knowledge. **[Reference for this Jeddah result is missing from the six listed references.]**

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Sulaimani, Iraq: 59.3% had fair knowledge, 36.4% had poor knowledge, and 4.3% had good knowledge **(Mahmood & Khalil, 2023)**.

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Northern Borders, Saudi Arabia: 42.3% had fair awareness, 34.3% had good awareness, and 23.4% had poor awareness. Overall, these studies indicate gaps in women's knowledge of GDM, highlighting the importance of health education during antenatal care **(Alenezi et al., 2025)**.

RESEARCH METHODOLOGY

3.1 Study Design

A descriptive cross-sectional hospital-based study will be conducted to assess the knowledge and awareness of pregnant women regarding gestational diabetes mellitus (GDM) and its impact on maternal and fetal outcomes.

3.2 Study Area

The study will be conducted at the Obstetrics and Gynecology Department of Dongola Hospital, Northern State, Sudan.

3.3 Study Population

The study population will consist of pregnant women attending the Obstetrics and Gynecology Department during the study period.

3.4 Study Duration

The study will be conducted from October to November 2026.

3.5 Sample Size

The sample size was calculated using the single population proportion formula, based on an estimated gestational diabetes mellitus (GDM) prevalence of 12·18% in Sudan, a 95% confidence level, and a 5% margin of error. Using a prevalence of 18%, the calculated sample size was 227 pregnant women.

3.6 Sampling Technique

A non-probability convenience sampling technique will be used to select eligible pregnant women who attend the hospital during the data collection period and agree to participate in the study.

3.7 Data Collection Tool

Data will be collected using a structured questionnaire consisting of the following sections:

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Section A: Sociodemographic characteristics.

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Section B: Obstetric history.

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Section C: Knowledge and awareness of gestational diabetes mellitus.

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Section D: Risk factors, signs and symptoms, screening, and diagnosis.

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Section E: Prevention, management, and possible maternal and fetal complications.

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Section F: Sources of information about gestational diabetes mellitus.

3.8 Validity and Reliability

The questionnaire will be reviewed by experts in nursing and maternal health to assess its content validity. A pilot study will be conducted on a small number of pregnant women to assess the clarity and suitability of the questions. Necessary modifications will be made before the main data collection.

3.9 Data Collection Procedure

After obtaining the necessary administrative and ethical approvals, eligible pregnant women will be approached and informed about the purpose of the study. Data will be collected using the structured questionnaire after obtaining informed consent from participants.

3.10 Data Analysis

The collected data will be coded, entered, and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies and percentages, will be used to summarize the findings. Appropriate statistical tests may be used to examine associations between participants' knowledge levels and their sociodemographic characteristics. The results will be presented in tables and figures where appropriate.

3.11 Ethical Considerations

Ethical approval and the necessary administrative permissions will be obtained before data collection. Participation will be voluntary, and informed consent will be obtained from all participants. Confidentiality and privacy will be maintained, and participants will have the right to withdraw from the study at any time without affecting their healthcare services.

References

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