KNOWLEDGE LEVEL OF PREGNANT WOMEN ABOUT GESTATIONAL DIABETES MELLITUS WITH RANDOM BLOOD GLUCOSE EXAMINATION

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ABSTRACT

Gestational Diabetes Mellitus (GDM) is characterized by glucose intolerance originating during pregnancy, typically resolving postpartum. Unmanaged GDM elevates risks for macrosomia, preeclampsia, and maternal type 2 diabetes. This study evaluated the correlation between GDM knowledge and random blood glucose (RBG) levels among pregnant women at Tuntungan Community Health Center, Medan. Using a cross-sectional descriptive-analytic design and non-probability sampling ($n=33$), data were gathered via questionnaires and RBG testing, then analyzed using Chi-square tests (SPSS v.26). Results showed 63.6% of participants had abnormal RBG levels. Statistical analysis confirmed a significant relationship between knowledge levels and RBG outcomes ($p < 0.05$). Consequently, enhancing health education and routine glucose monitoring is vital to mitigate GDM complications.

Keywords : *Knowledge; Pregnancy; Gestational Diabetes Mellitus.*

INTRODUCTION

Gestational Diabetes Mellitus (GDM) is a metabolic dysfunction defined by glucose intolerance with onset or first recognition during pregnancy, primarily driven by hormonal shifts that impair insulin sensitivity. Globally, the prevalence of GDM is escalating, with the World Health Organization (WHO) estimating that approximately 14% of pregnancies are affected. In the Indonesian context, GDM remains a critical determinant of maternal and neonatal morbidity. While clinical management involving dietary modification and pharmacological intervention is well-established, the efficacy of these treatments is heavily contingent upon maternal health literacy.

Despite the clinical significance of GDM, a substantial gap exists between medical guidelines and actual patient compliance in primary healthcare settings. Previous studies have extensively explored the physiological mechanisms of GDM, yet there is limited evidence addressing how specific localized knowledge deficits directly correlate with immediate glycemic outcomes, particularly in suburban clinical areas like Medan. Many pregnant women remain unaware of the asymptomatic nature of hyperglycemia, leading to delayed screenings and poor glycemic control. This disparity highlights a critical need to evaluate whether maternal understanding translates into measurable physiological stability.

Consequently, assessing maternal knowledge is imperative, as it dictates the adoption of preventive behaviors, including glucose monitoring and antenatal adherence. This study addresses this gap by investigating the correlation between the knowledge levels of pregnant women and their random blood glucose (RBG) results at Tuntungan Community Health Center, Medan. By establishing this relationship, the research aims to provide a diagnostic basis for developing more targeted health education frameworks to mitigate the long-term risks of postpartum type 2 diabetes and neonatal complications.

METHOD

This study employed a descriptive-analytic design with a cross-sectional approach to investigate the correlation between maternal knowledge and random blood glucose (RBG) levels. The research was conducted at Tuntungan Community Health Center, Medan, spanning from June 4 to June 29, 2024. The target population comprised 255 pregnant women registered at the facility. A sample size of 33 respondents was determined using Slovin's formula, selected through non-probability purposive sampling. Inclusion criteria specifically targeted pregnant women aged 20–40 years who were actively attending antenatal care (ANC) and provided informed consent to participate.

The research process involved a collaborative execution between the primary researchers and trained healthcare staff at the Puskesmas. Researchers were responsible for screening candidates, administering questionnaires, and overseeing the data flow, while clinical staff assisted in the physiological measurements to ensure medical accuracy. Data collection was bifurcated into two primary instruments:

a structured questionnaire and a clinical RBG test. The questionnaire, previously validated for reliability, assessed knowledge regarding Gestational Diabetes Mellitus (GDM), including its etiology, symptomatology, risk factors, and preventive measures. Simultaneously, RBG levels were measured using a calibrated digital glucometer by authorized medical personnel to ensure procedural consistency. Data analysis was performed using SPSS version 26. Univariate analysis was utilized to present frequency distributions of demographic and clinical variables. To determine the statistical relationship between the independent variable (knowledge level) and the dependent variable (RBG results), bivariate analysis was conducted using the Chi-square test. The threshold for statistical significance was established at $p < 0.05$. Prior to data collection, this study underwent a rigorous ethical review to ensure respondent confidentiality and safety; the certificate of ethical clearance is attached to this submission.

RESULTS AND DISCUSSION

Analysis of Research Findings

The quantitative analysis of 33 pregnant women at Tuntungan Community Health Center reveals critical insights into the interplay between health literacy and clinical outcomes. The demographic profile indicates that the majority of respondents were in the age range of 25–35 years, a period often associated with peak reproductive risk but also higher receptivity to health information. Most participants were housewives with a secondary education background, factors that significantly influence their daily dietary habits and access to structured medical information.

Table 1. Knowledge Levels and Random Blood Glucose (RBG) Distribution

Variable	Category	Frequency (n)	Persentage (%)
Knowledge Level	Good	17	52%
	Moderate	11	33%
	Poor	5	15%
RBG Levels	Abnormal (≥ 200 mg/dL)	21	64%
	Normal (<200 mg/dL)	12	36%

Data in Table 1 shows that while over half of the respondents (51.5%) possessed a "Good" level of knowledge regarding Gestational Diabetes Mellitus (GDM), a concerning 63.6% exhibited abnormal RBG levels. The Chi-square test yielded a significant p-value ($p < 0.05$), confirming a robust statistical correlation between maternal knowledge and glycemic control.

Discussion: The Gap Between Knowledge and Clinical Reality

The finding that 51.5% of respondents have good knowledge suggests that basic health socialization at the primary care level is reaching the community. However, the high prevalence of abnormal RBG (63.6%) presents a paradoxical clinical reality.

1. **Facts and Theoretical Integration**

   Theoretically, high health literacy should translate into better self-care agency. In this study, respondents with superior knowledge were significantly more likely to maintain glucose levels within the normal range. This aligns with the Health Belief Model, which posits that an individual's perception of a health threat (GDM) and the perceived benefits of action (glucose monitoring) are driven by their underlying knowledge. However, the 15.2% with poor knowledge were almost universally found in the abnormal RBG category, reinforcing the theory that ignorance of GDM risks leads to poor dietary compliance.

2. **Clinical Implications and Opinions**

   The high percentage of abnormal glucose levels among housewives suggests that environmental and lifestyle factors may override theoretical knowledge. It is our opinion that "knowing" the risks of GDM does not always equate to the "ability" to manage them, especially when faced with traditional Indonesian dietary habits that are high in carbohydrates and sugar. Furthermore, the asymptomatic nature of early-stage hyperglycemia often leads pregnant women to underestimate the urgency of their condition.

3. **Comparison with Previous Research**

   These results mirror global trends where maternal education acts as a primary barrier to GDM prevention. However, this study uniquely highlights that even in a suburban setting like Medan, where information is accessible, physiological outcomes remain suboptimal. This suggests that future interventions must move beyond general knowledge transfer and focus on and frequent clinical screenings to bridge the gap between awareness and physiological health.

CONCLUSION

This study concludes that a statistically significant relationship exists between the knowledge levels of pregnant women and their random blood glucose (RBG) outcomes at Tuntungan Community Health Center, Medan. The findings demonstrate that higher health literacy regarding Gestational Diabetes Mellitus (GDM) is a clinical determinant for maintaining normoglycemia, thereby reducing the risks of maternal and neonatal complications. Consequently, these results imply that cognitive awareness is a fundamental precursor to effective self-management during pregnancy.

Based on these findings, it is recommended that healthcare providers implement structured and continuous GDM education programs during routine antenatal visits. Furthermore, pregnant women should be encouraged to adopt proactive health behaviors, including regular glucose monitoring and adherence to balanced nutritional guidelines. Future research should transition toward interventional studies to evaluate the efficacy of specific educational models in improving maternal self-care behaviors and long-term physiological stability.

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