SCIENTIFIC RESEARCH REPORT

Determining the rate of gestational diabetes mellitus (GDM) and some related factors in prevention and control of gestational diabetes mellitus, period of 2022 – 2023

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I. INTRODUCTION

- ✓ WHO (2013), hyperglycemia first detected during pregnancy is classified into two groups: **Diabetes in Pregnancy (DIP)** and **Gestational Diabetes Mellitus (GDM)**. DIP is characterized by plasma glucose levels that meet the 2006 WHO diagnostic criteria for diabetes, while GDM involves plasma glucose levels that are below this diagnostic threshold.
- ✓ GDM can cause numerous maternal and fetal complications during pregnancy, such as **preeclampsia, miscarriage, stillbirth, perinatal mortality, neonatal hypoglycemia, and jaundice**. Postpartum, women with a history of GDM have up to a 50% risk of progressing to **type 2 Diabetes Mellitus (T2DM)** within 5-10 years and and a **lifetime risk of up to 80%**. Furthermore, children of mothers with GDM have a higher subsequent risk of developing **obesity and diabetes**.
- ✓ In Vietnam, socioeconomic and lifestyle changes have led to an increase in risk factors for both **Diabetes Mellitus (DM)** and **Gestational Diabetes Mellitus (GDM)**.
- ✓ Several **single-center studies** have reported a rising prevalence of Gestational Diabetes Mellitus.
- ✓ However, there is a lack of **nationwide studies** to provide data for **preventive intervention programs** and **timely diagnosis**

RESEARCH OBJECTIVE

To determine the prevalence of gestational diabetes mellitus and its associated factors at provincial and district-level hospitals in the Northern, Central, and Southern regions of Vietnam from 2022 to 2023

II. METHODS

STUDY SUBJECTS

1. Study Population

Pregnant women at 24 - 28 weeks of gestation.

Exclusion criteria: Cases with a prior diagnosis of diabetes mellitus before pregnancy; individuals with current medical conditions or using medications that affect glucose metabolism.

2. Study Design

A descriptive, cross-sectional study.

3. Study Period

From September 2022 to December 2022.

STUDY SUBJECTS

4. Study Scope and Setting

✓The study was conducted in 09 provinces/cities across the Northern, Central, and Southern regions of Vietnam. Nine provinces/cities were selected to represent the Northern, Central, and Southern regions. Each region comprised one major city, one lowland province, and one mountainous province.

- Northern region: Hanoi City, Thai Binh province, and Lao Cai province.
- Central region: Thanh Hoa province, Da Nang City, and Dak Lak province.
- Southern region: Ho Chi Minh City, Bac Lieu province, and Binh Phuoc province.

✓The research was carried out at provincial-level specialized obstetrics hospitals and district-level general hospitals.

- 60 participants were recruited from each provincial-level specialized obstetrics hospital.
- 39 participants were recruited from each district-level general hospital.
- **Systematic random sampling** was used to select participants from the pregnancy management registry at each hospital.

METHODS

5. Research variables

✓*General Information*

✓*Gestational Age*

✓*Assessment of GDM Prevalence:* Conducted at a gestational age of 24 - 28 weeks.

✓*Plasma Glucose Levels:* (Following the criteria of Decision No. 6173/QD-BYT issued by the Ministry of Health on Oct 12, 2018).

✓*Anthropometric Indices:* (Height, weight, BMI).

✓*Blood Pressure:* (JNC VII-2003).

✓*Family History:* History of diabetes mellitus in first-degree relatives.

✓*Personal Medical History related to Diabetes:*

General risk factors for Diabetes Mellitus.

Obstetric-related risk factors.

Prediabetes(QĐ 3319/QĐ-BYT).

METHODS

✓ *Knowledge, Attitude, and Practice (KAP)*

+ Knowledge: Assessment of knowledge regarding Gestational Diabetes Mellitus (GDM), its risk factors, and methods of prevention.

+ Attitude: Assessment of attitude towards the necessity of disease prevention and control.

+ Practice: Assessment of practices related to nutrition and physical exercise for the prevention of GDM.

III. RESULTS AND DISCUSSION

3.1. Age distribution of the study population by region

Table 3.1. Age group of study subjects by region

Age group	Northern (n, %)	Central (n, %)	Southern (n, %)	Nationwide (n, %)
< 25	102 (9,7%)	84 (8%)	93 (8,9%)	279 (26,6%)
25-35	204 (19,5%)	223 (21,3%)	218 (20,8%)	645 (61,6%)
> 35	42 (4%)	38 (3,6%)	44 (4,2%)	124 (11,8%)
Total	348 (33.2%)	345 (32,9%)	355 (33,9%)	1048 (100%)

3.2. Prevalence of gestational diabetes mellitus by region

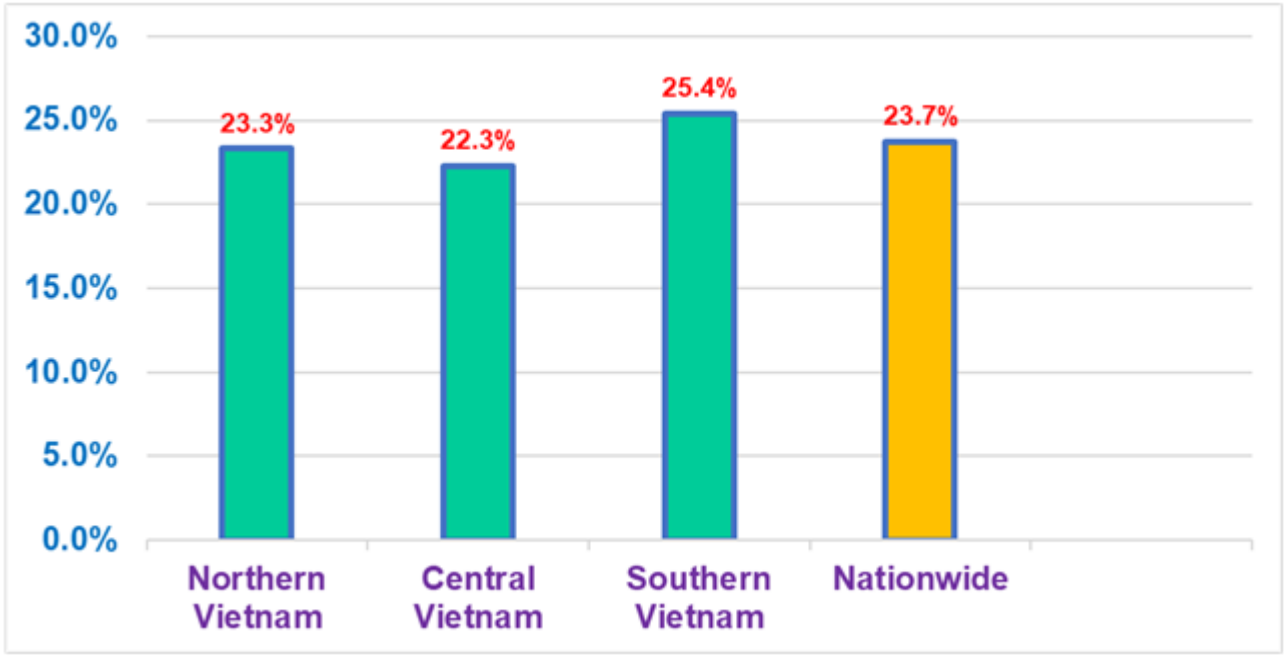

Figure 3.1. Prevalence of GDM by region

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3.3. Prevalence of GDM by geographical area

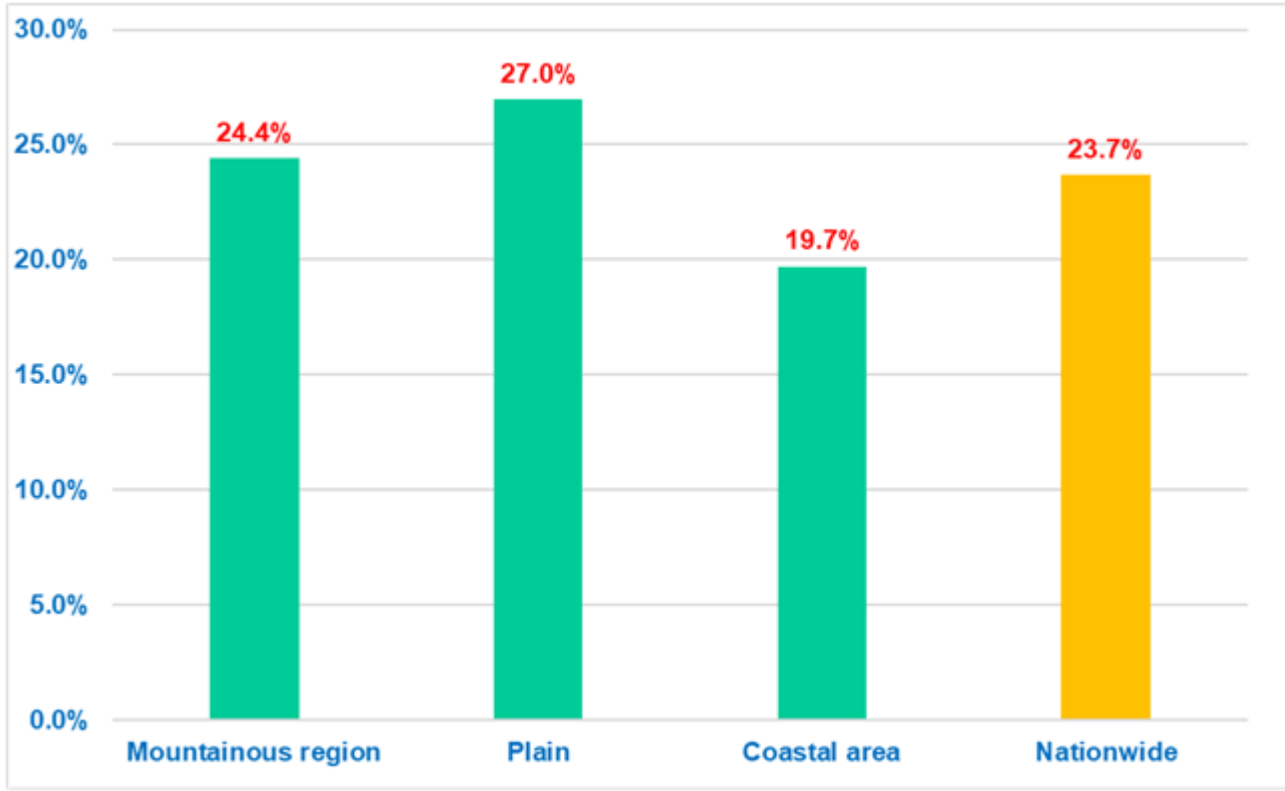

Figure 3.2. Prevalence of GDM by geographical area

3.4. Prevalence of GDM by economic region

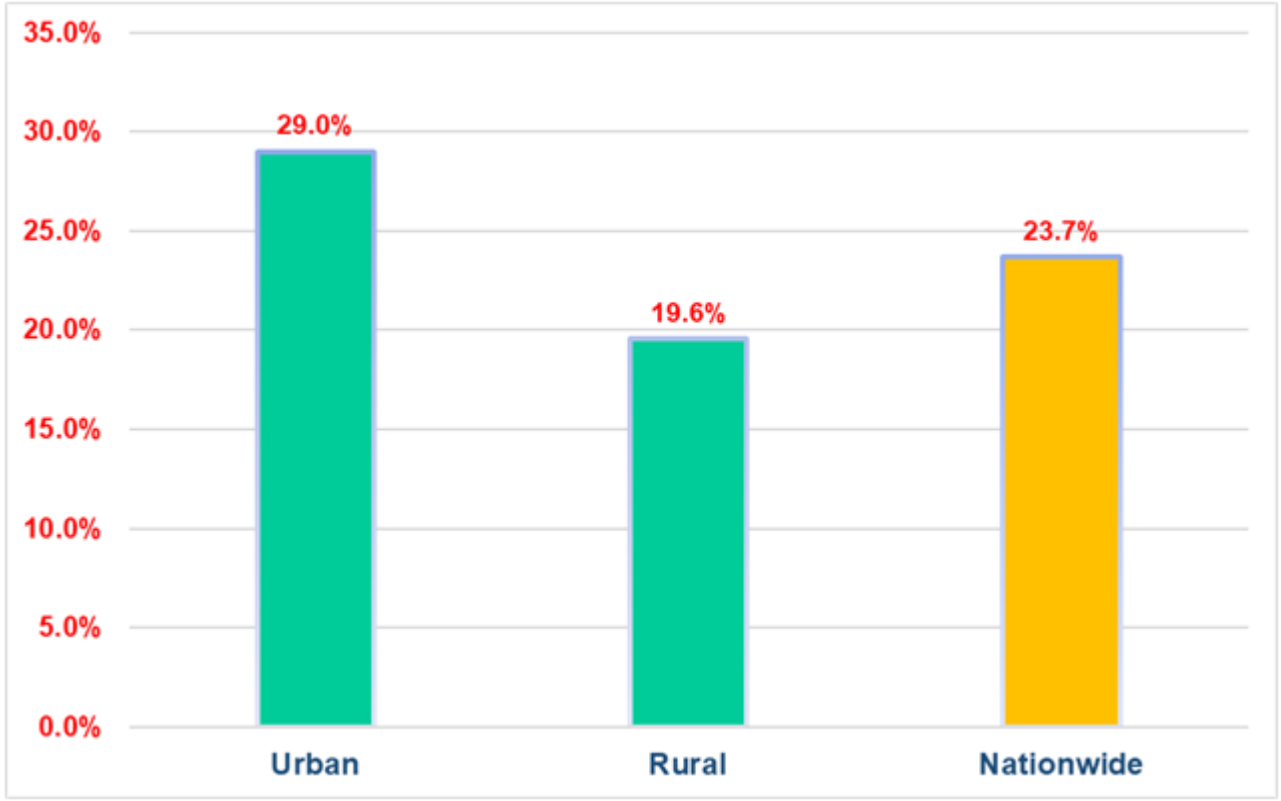

Figure 3.3. Prevalence of GDM by economic region

3.5. Association between GDM prevalence and age group

Table 3.2. Association between gdm prevalence and age group

Risk factors	GDM		Total
	+	-	
	n (%)	n (%)	
Age < 35	208 (22,5%)	716 (87,5%)	924 (88,17%)
Age ≥ 35	40 (32,3%)	84 (67,7%)	124 (11,83%)
Total	248 (23,7%)	800 (76,3%)	1048
OR (95% CI)	1,6 (1,06 - 2.49)		
p	< 0,05		

3.6. Association between GDM prevalence and obstetric history

Table 3.3. Association between GDM prevalence and obstetric history

Risk factors	GDM		Total
	+	-	
	n (%)	n (%)	
With a GDM-related medical history			
No	128 (16,9%)	630 (83,1%)	**758 (72.33%)**
Yes	120 (41,4%)	170 (58,6%)	**290 (27.67%)**
Total	248 (23,7%)	800 (76,3%)	**1048**
OR (95% CI)	**3.46 (2.54 - 4.75)**		
p	**< 0,05**		

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3.7. Knowledge of nutrition during pregnancy

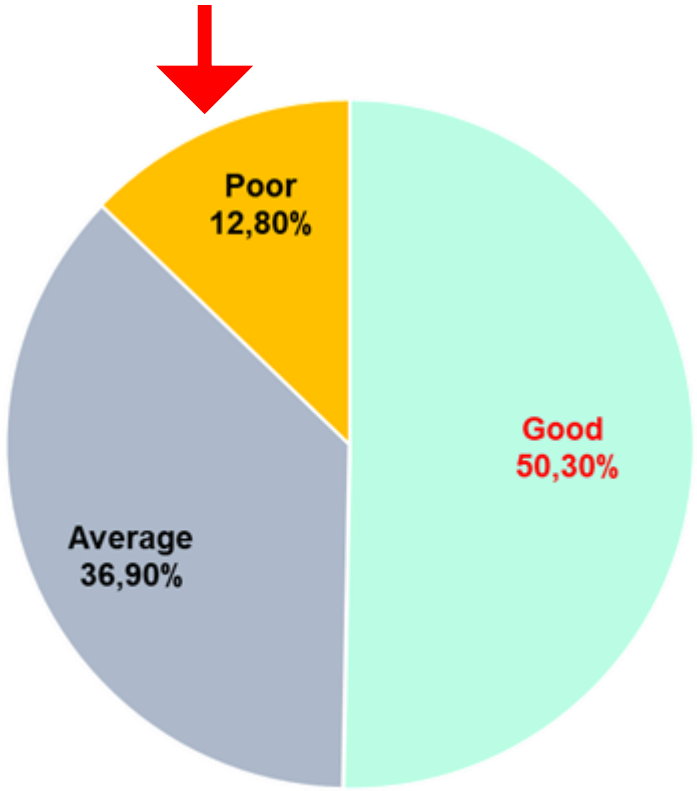

Figure 3.4. Distribution of knowledge about gdm among study participants

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3.8. Knowledge of GDM prevention

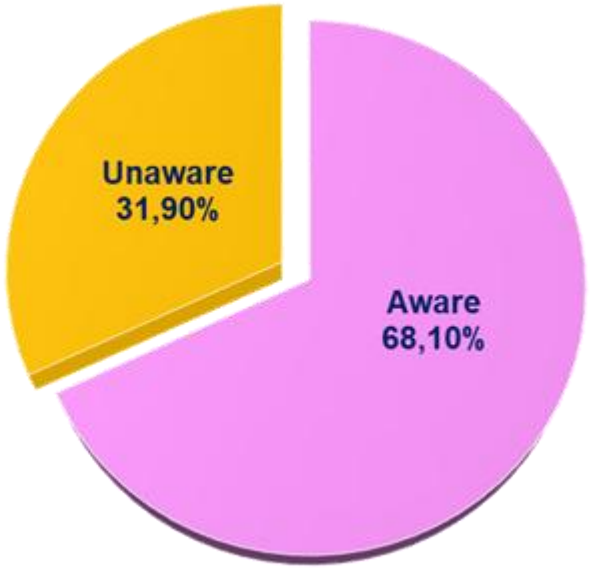

Figure 3.5. Prevalence of awareness regarding GDM prevention among study subjects

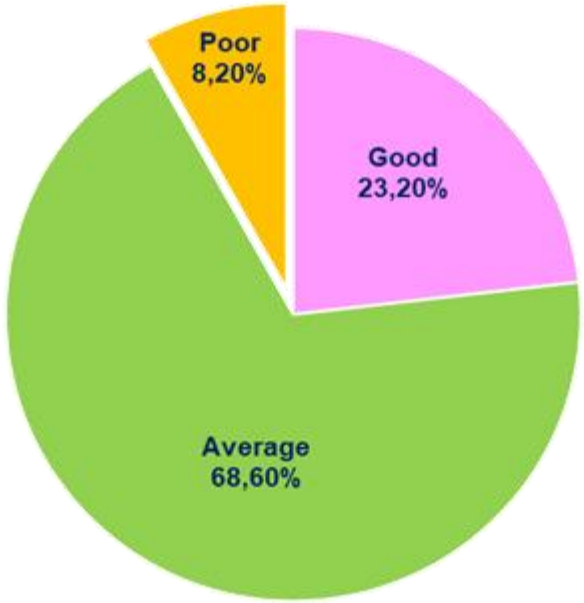

Figure 3.6: Distribution of study participants by level of knowledge regarding GDM

3.9. Knowledge regarding GDM treatment among study participants

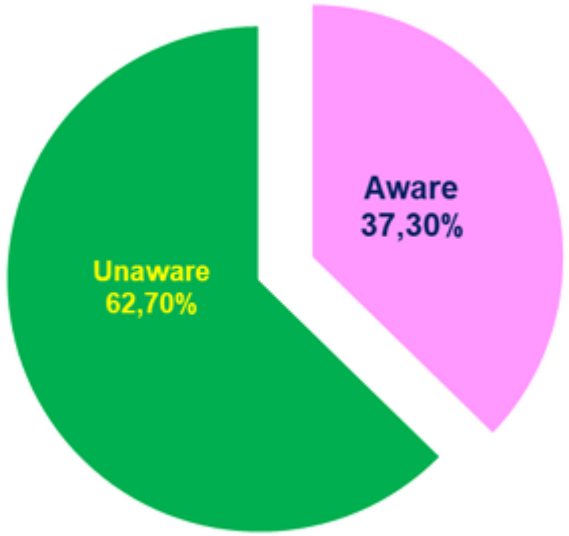

Figure 3.7. Awareness of GDM Treatment among Pregnant Women

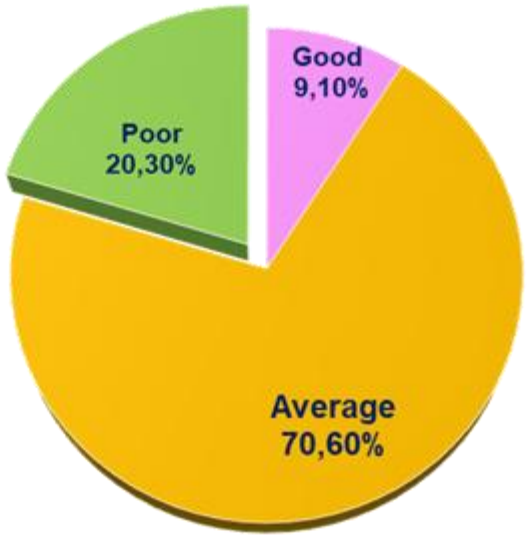

Figure 3.8. Knowledge of the Management and Treatment-Seeking Process for GDM

3.10. Attitude of study participants towards GDM prevention

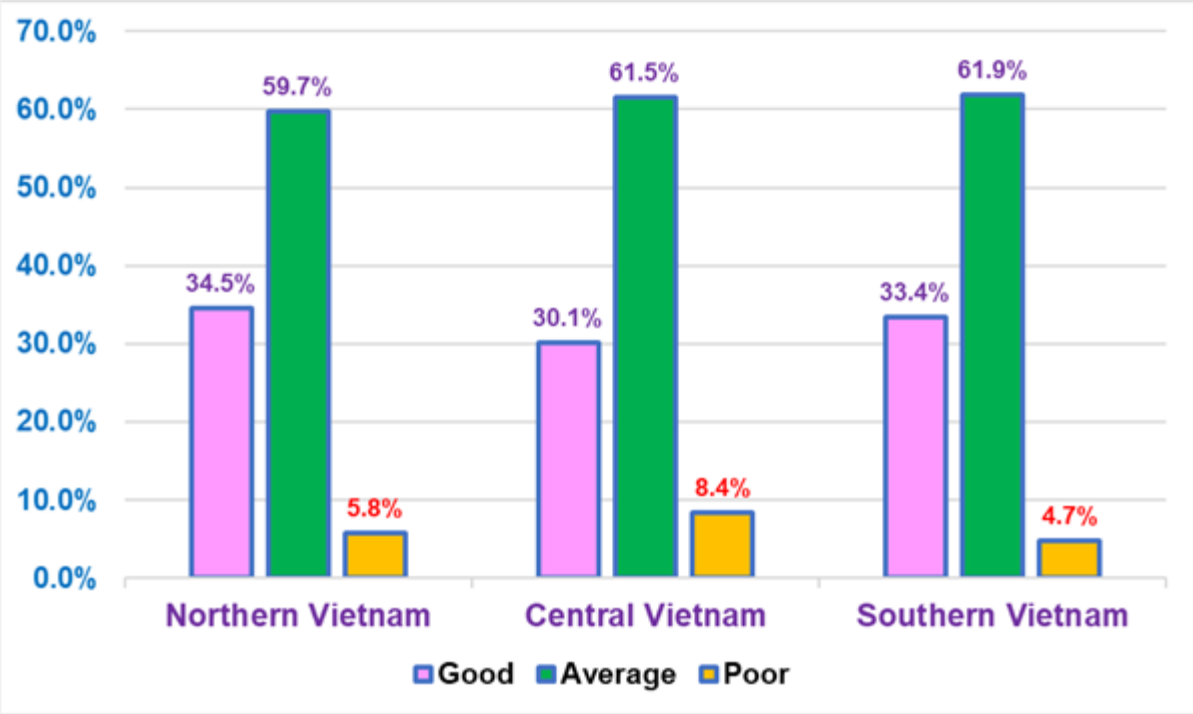

Figure 3.8. Attitude of study participants towards GDM prevention by region

3.11. Food group selection practices among study participants

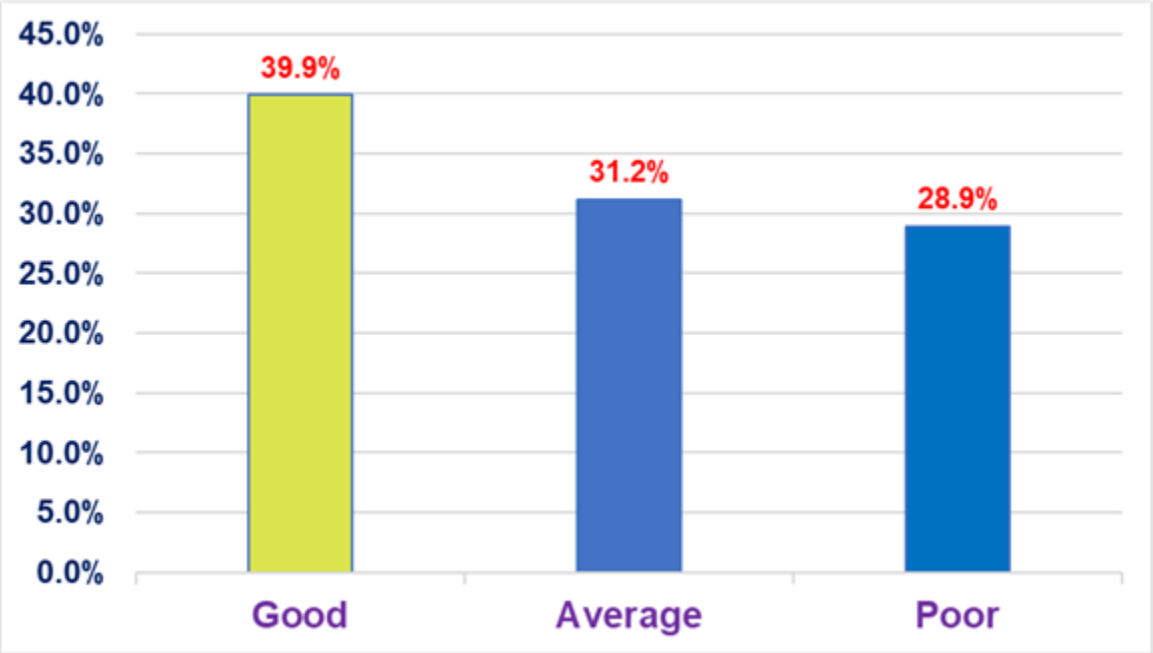

Figure 3.9. Proportion of study participants by level of practice in food selection for GDM

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3.12. Physical activity practices among study participants

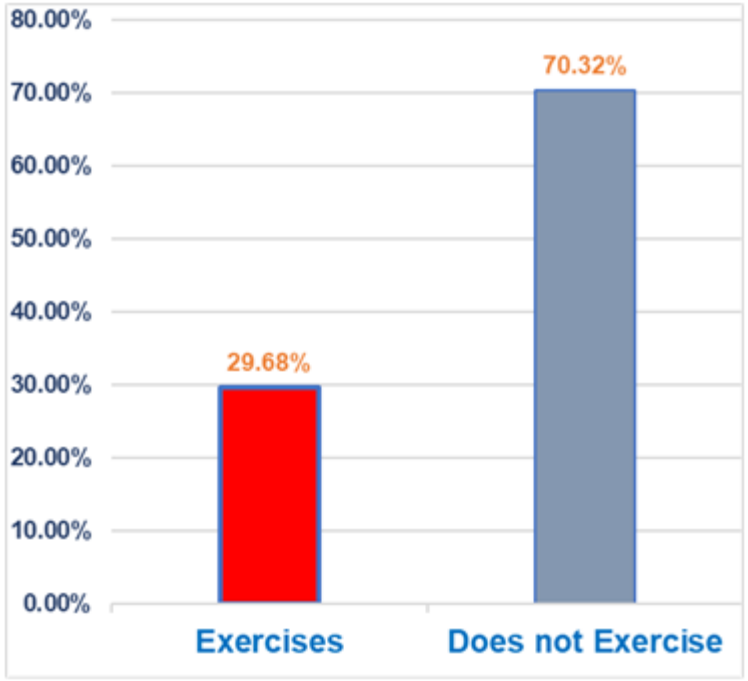

Figure 3.10. Rate of Daily Exercise

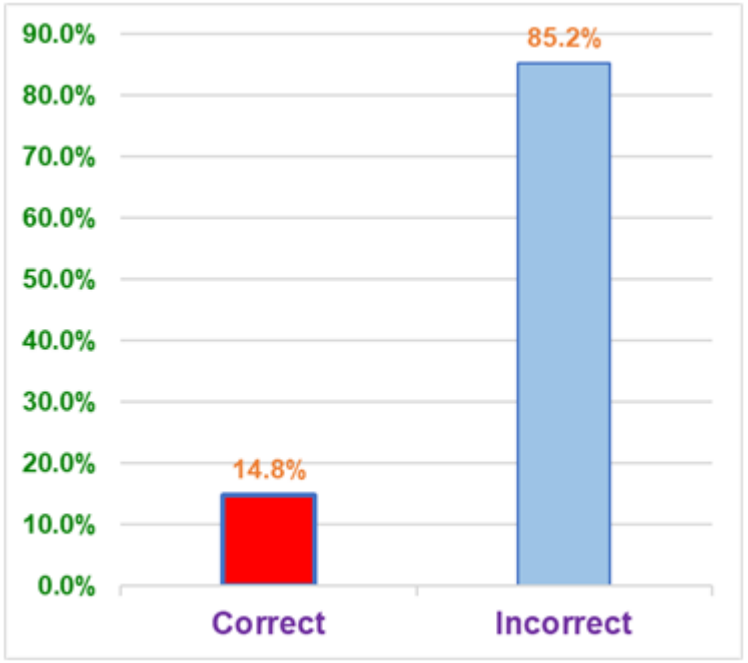

Figure 3.11. Percentage of Study Participants Who Exercise Correctly

IV. CONCLUSION

1. GDM prevalence and associated factors

- The overall prevalence of GDM in the study was **23.7%**; the rate was 29% in urban areas and 19.6% in rural areas.
- The prevalence of GDM was comparable across the three major regions: 25.4% in the Southern region, 23.3% in the Northern region, and 22.3% in the Central region.
- Pregnant women aged ≥ 35 years had a higher risk of developing GDM compared to those < 30 years of age (OR = 1.60, 95% CI 1.06-2.49, $p < 0.05$).
- Pregnant women with a GDM-related medical history had a significantly higher risk of developing the condition (OR = 3.46, 95% CI 2.54-4.75, $p < 0.05$).

IV. CONCLUSION

4. Knowledge, Attitude, and Practice (KAP) regarding GDM Prevention

✓While half of the pregnant women demonstrated good knowledge in selecting a proper diet, **12.8%** still lacked knowledge regarding nutrition during pregnancy.

✓**62.7%** of pregnant women were unaware of the necessity of early detection, and of seeking and utilizing healthcare services for GDM treatment.

✓The majority of pregnant women **(>90%)** had a positive attitude towards GDM prevention.

✓Nearly **one-third** of pregnant women demonstrated inadequate practices in selecting appropriate foods for their daily meals to prevent GDM.

✓**70%** of pregnant women did not meet the recommended levels of physical activity during pregnancy as advised by the WHO and the Vietnamese Ministry of Health

V. RECOMMENDATIONS

- ✓ We recommend that all antenatal care facilities routinely implement the Oral Glucose Tolerance Test (OGTT) as mandatory screening for the timely diagnosis of Gestational Diabetes Mellitus (GDM), particularly in pregnant women aged 35 years or older and those with a GDM-related medical history.
- ✓ Enhance health communication and knowledge dissemination efforts regarding GDM prevention for pregnant women.

THANK YOU!