

**UNIVERSITI TEKNOLOGI MARA**

**PREVALENCE OF POSTPARTUM-  
ABNORMAL GLUCOSE  
TOLERANCE (P-AGT) AND ITS  
ASSOCIATED FACTORS AMONG  
WOMEN WITH GESTATIONAL  
DIABETES MELLITUS (GDM) IN  
KLANG, SELANGOR**

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of the requirements for the degree of  
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## ABSTRACT

**Introduction:** Women with gestational diabetes mellitus (GDM) have a risk to develop diabetes at least seven times higher than other women. The study aimed to determine the prevalence of postpartum-abnormal glucose tolerance (P-AGT), the level of knowledge on GDM and the associated factors for P-AGT among postpartum women with GDM attending public health clinics in Klang.

**Methods:** This cross-sectional study used convenience sampling and was conducted among GDM women attending the oral glucose tolerance test (OGTT) at six to 12 weeks postpartum. Sociodemographic factors, clinical characteristics, knowledge about GDM (using a validated questionnaire, GDMKQ) and postpartum OGTT results were collected.

**Results:** The study included 439 participants. The majority were below the age of 35 years old (71.8%), of Malay ethnicity (82.7%), and demonstrated adequate knowledge of GDM (92.9%). The prevalence of P-AGT was found to be 28.9% (95% CI:24.7, 33.4). Multiple logistic regression analysis showed gestational age upon GDM diagnosis <24 weeks (aOR: 1.85, 95% CI: 1.17, 2.92;  $p = 0.009$ ), abnormal 2-hour postprandial (2HPP) level (>7.8mmol/L) upon GDM diagnosis (aOR: 2.95, 95% CI: 1.74, 5.00;  $p < 0.001$ ) and first-degree family history of diabetes (aOR: 1.55, 95% CI: 1.01, 2.39;  $p = 0.047$ ) were significantly associated with P-AGT.

**Conclusion:** This study revealed higher prevalence of P-AGT compared to previous local studies. Targeted monitoring and management strategies are crucial, especially for women diagnosed with GDM before 24 weeks of gestation, those who had abnormal 2HPP level upon GDM diagnosis and those with first-degree family history of DM to prevent the occurrence of P-AGT.

**Keywords:** diabetes, gestational; glucose intolerance, diabetes mellitus, knowledge, risk factors

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# CHAPTER 1

## INTRODUCTION

The prevalence of diabetes is increasing both globally and in Malaysia. The International Diabetes Federation (IDF) Diabetes Atlas reported that in 2021, there were 536.6 million people with diabetes, which was expected to rise to 783.2 million by 2045 [1]. A similar trend was seen in local settings which the Malaysian National Health and Morbidity Survey (NHMS) 2019 reported the prevalence of overall raised blood glucose in Malaysia in 2019 was 18.3%, an increase compared to findings of 2011 (11.2%) and 2015 (13.4%) [2].

Family history of diabetes, obesity, raised waist circumferences and physical inactivity are the recognized predictors of diabetes in the general population [3]. A remarkable predictor of diabetes in women is gestational diabetes mellitus (GDM). The prevalence of GDM displayed considerable worldwide variation due to differences in its diagnostic criteria. A meta-analysis by Saeedi *et. al* demonstrated GDM's global prevalence at 14.7% [4]. Meanwhile, across Asian countries, this prevalence ranges from 1.2% to 49.5% [5] while Malaysian local studies showed the prevalence of GDM in Malaysia was approximately 21.5% [6]. Women with a history of GDM are at a high risk to develop diabetes, at least seven times higher compared to women with normoglycemia throughout their pregnancy [7]. Additionally, studies have indicated that women with GDM face twice the risk of developing cardiovascular disease (CVD) compared to those without GDM [8]. Hence, they form a remarkable group for targeted prevention and intervention programs to impede the development of diabetes and CVD.

American Diabetes Association (ADA) recommends screening women with GDM at four to 12 weeks postpartum using 75-g oral glucose tolerance testing (OGTT) [9], while the Malaysian guideline recommends the OGTT to be done at six weeks postpartum [10]. Based on the OGTT result, they will be grouped either into postpartum-normal glucose tolerance (P-NGT) which they will be advised to undergo yearly OGTT screening afterwards [10]; or postpartum-abnormal glucose tolerance (P-AGT). P-AGT includes prediabetes [either isolated impaired fasting glucose (IFG), isolated impaired glucose tolerance (IGT), or combined IFG and IGT] and diabetes.