

INFLUENCE OF BODY MASS INDEX ON DIABETIC CONTROL IN TYPE 2 DIABETES: A HIERARCHICAL MULTINOMIAL LOGISTIC REGRESSION STUDY FROM THE MUAR DISTRICT NATIONAL DIABETIC REGISTRY (2021–2023)

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ABSTRACT

Introduction: Type 2 diabetes mellitus (T2DM) is a leading non-communicable disease worldwide, with poor diabetic control contributing to significant long-term complications. Additionally, Body Mass Index (BMI) plays a critical role in the management of T2DM, as obesity is associated with adverse health outcomes, further complicating diabetic control and increasing the risk of diabetes-related complications. Objective: This study aims to explore the relationship between Body Mass Index (BMI) and diabetic control in patients with T2DM. Methods: A cross-sectional analysis was conducted between October 2023 and June 2024, utilizing secondary data from the National Diabetic Registry (NDR) of the Muar Health District Office in Johor, Malaysia. The study included T2DM patients registered and audited in the NDR from 2021 to July 2023. The association between BMI and diabetic control was assessed using hierarchical multinomial logistic regression. Results: A total of 1,955 patients were analyzed. The distribution of diabetic control was as follows: 38.8% had good control (95% CI: 36.7–41.0), 22.2% had moderate control (95% CI: 20.3–24.0), and 39.0% had poor control (95% CI: 36.7–41.2). A significant association was found between BMI and diabetic control, both in unadjusted models ($p < 0.001$) and after adjusting for confounders across seven models (p -value range: 0.003 to 0.034). Most of the medications reduced impact of BMI on poor diabetes control compared to normal, such as lipid-lowering drugs (aOR 1.034, 95%CI 1.013, 1.055), antiplatelet drugs (aOR 1.033, 95%CI 1.013, 1.054), and glucose-lowering drugs (aOR 1.028, 95%CI 1.006, 1.051). Conclusion: BMI is significantly associated with diabetic control in T2DM patients. Medications like lipid lowering drugs, antiplatelet, or glucose lowering drugs were especially effective in reducing the negative impact of a higher BMI on diabetes control. Enhancing medication adherence, optimizing healthcare provider interactions, and ensuring consistent drug supply are critical factors in improving diabetic outcomes.

Keywords: Body Mass Index, Diabetes Mellitus Control, Type 2 Diabetes Mellitus, Malaysia National Diabetes Registry.
