

UNIVERSITI TEKNOLOGI MARA

**ASSOCIATION OF NUTRITIONAL STATUS AND
PHYSICAL ACTIVITY LEVEL WITH DIABETES RISK
AMONG STUDENTS AT POLITEKNIK SULTAN SALAHUDDIN
ABDUL AZIZ SHAH (PSA)**

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ABSTRACT

Diabetes mellitus is one of the most serious concerns in public health, with the risk that it can affect all age categories and lead to debilitating complications if not controlled. This cross-sectional study aimed to analyze the associations among nutrition and its status, physical activity levels, and diabetes risk in young adults at Politeknik Sultan Salahuddin Abdul Aziz Shah (PSA), Selangor. A total of 121 students aged 18–29 years were recruited, excluding those diagnosed, pregnant, or breastfeeding students. Anthropometric measurements such as BMI, waist circumference, fat mass, body fat percentage, fat-free mass, and visceral fat were included in the determination of nutritional status. Physical activity was measured using the International Physical Activity Questionnaire Short Form (IPAQ-SF), while the risk for diabetes was measured using the Finnish Diabetes Risk Score (FINDRISC). It was expected that variables of poor nutritional status, such as high BMI, fat mass, and visceral fat, would show a significant association with increasing diabetes risk, whereas increasing physical activity would have an opposite relationship. Research results show that 58.7% of students were overweight or obese, 35.5% had high-risk waist circumference, and a considerable number showed abnormal fat mass and percentage body composition parameters, revealing an unhealthy nutritional state. On FINDRISC, 13.2% of participants were at moderate to very high risk for developing type 2 diabetes. According to Spearman analysis, there were significant correlations between BMI, body fat percentage, fat mass, fat-free mass, visceral fat, and waist circumference with FINDRISC score in both genders at $p < 0.05$, except for physical activity, which had no significant association. These findings reinforce the initial expectation that nutritional status is a strong predictor of diabetes risk, while physical activity level may never be a significant influence on risk. For the prevention of type 2 diabetes among young adults, emphasis must be laid on starting interventions early by modifying body weight and lifestyle practices.

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CHAPTER 1: INTRODUCTION

1.1 Background of Study

Nowadays, diabetes mellitus has become a common disease worldwide. Diabetes mellitus is known as a noncommunicable disease where glucose levels in the blood are too high. It happens when one of the vital organs, the pancreas, does not produce enough insulin to move glucose from the blood into cells all over the body (Adeleke & Ayenigbara, 2019). Insulin is essential as it can lower glucose levels in the blood by converting excess glucose in the body into glycogen. Hyperglycemia is also known as a condition where blood glucose concentration is raised. Long-term hyperglycemia causes diabetes mellitus and other health issues, including kidney and eye malfunction, and harm to the brain system. This disease can occur at any age, regardless of whether it is in children, adults, or the elderly. About 463 million individuals worldwide suffer from diabetes, and in Malaysia, roughly 3.6 million adults (18.3%) had elevated blood sugar in 2019 (Akhtar et al., 2022). The numbers are predicted to increase in the future.

There are 2 main categories of diabetes mellitus, which are Type 1 Diabetes and Type 2 Diabetes. Type 1 is caused by chronic autoimmune conditions, whereas type 2 diabetes is mostly caused by an unhealthy lifestyle. A lot of people are affected by diabetes mellitus type 2 compared to type 1 these days. According to research in 2019, people who are affected with type 1 and type 2 diabetes mellitus in Malaysia are 0.62% and 99.29% respectively (Chandran et al., 2020). To decrease the number of people affected by type 2 diabetes mellitus, a lot of prevention and action must be taken. One of them is that every individual needs to have awareness and practice a healthy lifestyle.