

Adolescent self-awareness in preventing diabetes mellitus risk

Hikayati*, Eka Yulia Fitri Y, and Rahmania Putri Oktaviani

Nursing Department, Faculty of Medicine, Universitas Sriwijaya, South Sumatra, Indonesia

**Corresponding Authors: hikayati@unsri.ac.id*

Abstract

The prevalence of diabetes mellitus among adolescents is increasing each year in developing countries, including Indonesia. Unhealthy eating patterns, obesity, lack of physical activity, and smoking are risk factors contributing to the occurrence of diabetes mellitus in adolescents. The aim of this study is to assess adolescents' self-awareness regarding the prevention of diabetes mellitus risk. This research employs a quantitative method with a descriptive analytical design. The population of this study consists of adolescents aged 15-16 years at a State Senior High School in Palembang. A total of 64 respondents were selected through simple random sampling. Data collection utilized a self-awareness questionnaire developed by the researchers, comprising 15 questions covering the components of emotional self-awareness, accurate self-assessment, and self-confidence. The questionnaire underwent validity testing (0.361) and reliability testing (0.788). The results indicated that the minimum self-awareness score was 20, and the maximum was 41, with an average score of 29.72. These findings reveal that adolescents' self-awareness regarding the risk of diabetes mellitus remains low. Therefore, there is a need to enhance self-awareness among adolescents about the importance of diabetes mellitus risk prevention, considering the continually rising prevalence of diabetes among adolescents and the potential macrovascular and microvascular complications that may arise.

Keywords: *Adolescents, Diabetes mellitus, Self-awareness*

ABSTRAK

Kesadaran diri remaja dalam mencegah risiko diabetes melitus. Prevalensi diabetes melitus pada remaja setiap tahun meningkat di negara berkembang termasuk di Indonesia. Pola makan yang tidak sehat, obesitas, kurangnya aktifitas fisik, dan merokok menjadi faktor risiko penyebab terjadinya diabetes melitus pada remaja. Tujuan penelitian ini adalah untuk mengetahui kesadaran diri remaja terhadap pencegahan risiko diabetes melitus. Penelitian ini menggunakan metode kuantitatif dengan desain deskriptif analitik. Populasi pada penelitian ini adalah remaja berusia 15-16 tahun di Sekolah Menengah Atas Negeri di Palembang. Sampel berjumlah 64 responden didapatkan dengan simple random sampling. Pengumpulan data menggunakan kuesioner kesadaran diri yang dikembangkan oleh peneliti, terdiri dari 15 pertanyaan meliputi komponen: *emotional self-awareness, accurate self-asessment dan self-confidence*. Kuesioner ini telah dilakukan uji validitas (0,361) dan reliabilitas (0,788). Hasil penelitian didapatkan skor minimal kesadaran diri adalah 20 dan maksimal 41, dengan rata-rata 29,72. Hasil penelitian tersebut menunjukkan kesadaran diri remaja tentang risiko diabetes melitus masih rendah, oleh karena itu dibutuhkan peningkatan kesadaran diri pada remaja tentang pentingnya pencegahan risiko diabetes melitus mengingat prevalensi diabetes pada remaja yang selalu meningkat setiap tahun dan komplikasi yang dapat ditimbulkan secara makrovaskuler dan mikrovaskuler.

Kata kunci: *Diabetes melitus, Remaja, Kesadaran diri, Self-awareness*

Introduction

The modern lifestyle changes among adolescents today are influenced by the development of technology and information within their social environment. Trends in adolescent lifestyles have negative impacts on health, including unhealthy eating habits, consumption of fast food, sugary beverages, sweet snacks, high-flour foods, smoking, and a lack of physical activity.¹⁻⁴ Fast food is high in calories, fat, sodium, and sugar, which can trigger diabetes if consumed continuously.³⁻⁵ The advancement of technology has led to a decrease in manual activities among adolescents, resulting in lower physical activity levels and the emergence of a sedentary lifestyle. A sedentary lifestyle involves prolonged activities such as using gadgets, laptops, playing video games, watching television, browsing the internet, and engaging in social media. This sedentary lifestyle significantly contributes to the increased risk of diabetes mellitus (DM) among adolescents.⁶⁻⁷ Additionally, adolescence is a period marked by significant physical, emotional, and social changes, which often leads to a lack of attention to health.^{4,5}

The prevalence of diabetes mellitus (DM) among adolescents aged 15 years and older in Indonesia is 10.9%, increasing to 11.7% based on blood sugar measurements. The rise in obesity among children and adolescents has led to an increase in the prevalence of various obesity-related complications, including type 2 diabetes. The onset of type 2 diabetes in children and adolescents is often found in the second decade of life, with a median age of 13.5 years, and is rarely observed before puberty. Furthermore, 48% of 16-year-olds and 16.4% of 15-year-olds are at risk of developing DM.⁸⁻¹⁰ The increasing prevalence of DM among adolescents is closely related to ignorance and a lack of self-awareness regarding the risks of the disease and its complications.^{8,10} Self-awareness is the intelligence that allows an individual to understand how to position themselves according to their circumstances and to be conscious of what actions they should take. An individual with self-awareness can better control their actions in alignment with their life goals.^{5,12-15} Prevention and management of DM encompass four pillars: medical nutrition therapy, pharmacological therapy, physical exercise, and education. Education serves as a primary prevention strategy for DM and can be provided to adolescents with risk factors. The goal of education is to enhance self-awareness among adolescents in preventing DM risks.^{13,16-18}

Materials and Methods

This study utilizes a quantitative method with a descriptive analytical design. The population consists of all adolescents aged 15-16 years at a State Senior High School in Palembang for the academic year 2024/2025, totaling 386 individuals. Sampling was conducted using simple random sampling through a lottery of student identification numbers. According to Isaac and Michael's formula for sample size calculation, 58 respondents were determined; an additional 10% was added to account for dropout rates, resulting in a total sample size of 64 respondents. The measurement tool used in this study was a self-awareness questionnaire developed by the researchers, consisting of 15 items covering three components of self-awareness: emotional self-awareness (4 items), accurate self-assessment (6 items), and self-confidence (5 items). The questionnaire underwent validity testing using Pearson correlation analysis, yielding a result of 0.361, and reliability testing using Cronbach's Alpha analysis, yielding a result of 0.788, indicating that the self-awareness questionnaire is both valid and reliable. The collected data were subsequently analyzed to provide an overview of adolescents'

self-awareness regarding DM risk prevention based on their knowledge and understanding.^{5,14,15,17,19}

Results and Discussion

The study found the characteristics of respondents based on gender and family history of diabetes mellitus. The distribution of respondent characteristics in this study shows that 10.9% were male and 89.1% were female, with the majority (85.9%) not having a family history of diabetes mellitus. This may increase the risk of DM occurrences among adolescents, as the respondents are not exposed to knowledge about DM and its risks within their families. The male-to-female ratio of DM varies from 1:4 to 1:6 in North America and approximately 1:1 in Asia and Libya. In America and Europe, children and adolescents with type 2 diabetes often come from lower socioeconomic backgrounds, while in China and India, it is more frequently found in wealthier families. The incidence of type 2 diabetes among children and adolescents in Thailand increased from 5% between 1986 and 1995 to 17.9% from 1996 to 1999.^{8,9}

Gender can influence an individual's self-awareness regarding health maintenance. Females have a significant responsibility in addressing health-related issues. Awareness of diabetes (diabetes awareness) is higher among females (68.4%) compared to males (60.2%).^{13,17,18} Self-awareness serves as a fundamental component of emotional intelligence. Emotional intelligence in adolescents differs significantly between genders, with females generally exhibiting higher emotional intelligence than males. This is because females tend to rely more on feelings when making decisions and possess better abilities to recognize emotions.^{4,5,20,21} The lower self-awareness regarding DM among male respondents can be attributed to their health attitudes and behaviors, which are still lacking compared to females.^{5,12-14,22}

Among the respondents, 85.9% did not have a family history of diabetes mellitus, which is significantly higher than those with a family history. This may result in respondents having less knowledge and experience regarding diabetes, risk factors, and preventive measures since they have not received such information from their families. An individual's experiences can significantly influence their self-awareness in disease prevention efforts; however, diabetes can occur in anyone with an unhealthy lifestyle. An individual's self-awareness increases in line with their knowledge.^{13,14,17,18,23}

The study results indicate that among the 64 respondents, the lowest self-awareness score was 20, with an average score of 29.72 (Table 1). The findings reveal that 65.6% of respondents were unaware of the risks associated with diabetes occurrence. The low self-awareness score among adolescents may increase the risk of developing DM by 20 times. (13,22) Self-awareness is a fundamental component of emotional intelligence and an essential initial stage for understanding oneself to facilitate change. Awareness must begin with a deep understanding of oneself to effectively monitor thoughts, feelings, and actions, enabling wiser decision-making. High self-awareness is reflected in how an individual understands their emotions, accurate self-assessment, and self-confidence. Without self-awareness to recognize oneself, an individual is unlikely to take responsibility for their decisions. Someone with high self-awareness fully acknowledges their responsibilities and choices, particularly in maintaining personal health.^{5,15,18,23}

Self-awareness is influenced by factors such as age, gender, education, and experience. Individuals with low self-awareness may be affected by a lack of knowledge. Low self-awareness may stem from a lack of knowledge among respondents. Knowledge is a crucial aspect of enhancing self-awareness in adopting a healthy lifestyle, allowing for early detection of emerging symptoms. Individuals with better knowledge are more likely to have self-awareness when

taking action based on the information they possess.^{18,19} Individuals with better knowledge are more likely to possess self-awareness when taking action based on the information they have.^{5,17,19}

Table.1. Self-Awareness Scores of Adolescents Regarding Diabetes Mellitus Risk Prevention.

Self-awareness Score	n	Min	Max	Mean
	64	20	41	29.72

Analysis of the questionnaire revealed that 42.2% of respondents tended to consume fast food and sweets when stressed or angry. This aligns with the theory of emotional eating, which explains that emotional stress can trigger the desire to consume high-sugar foods and beverages. Such dietary changes emerge as a response to negative emotions caused by stress or anger. This is detrimental to health, as consuming high-sugar and high-fat foods can disrupt the balance of macro-nutrient intake, potentially affecting an individual's nutritional status and increasing the risk of various degenerative diseases, including diabetes.^{4,5,17,20} Self-awareness is one of the factors that can influence sugar consumption habits among adolescents. Self-awareness refers to a deep understanding of one's own identity.

Furthermore, 48.4% of respondents frequently avoided physical activity and preferred to rest at home when feeling tired from schoolwork and activities. Daily physical activity is not the same as exercise but is highly recommended to maintain an active routine. Daily physical activities can include walking, doing household chores, and gardening, while exercise can include jogging, swimming, and weight lifting. Higher levels of physical activity correlate with lower blood glucose levels due to increased insulin receptor sensitivity in active muscles. The contraction of these muscles facilitates glucose uptake into cells. This indicates that physical activity can reduce insulin resistance, subsequently lowering blood sugar levels. Insufficient physical activity may disrupt insulin activation processes, leading to hyperglycemia, which is a symptom of diabetes mellitus. The researchers assume that respondents have not been exposed to information on the impact of insufficient physical activity on increasing diabetes risk, resulting in low self-awareness among respondents. Hence, with proper information, individuals are likely to become more aware of the importance of maintaining their health.^{2,7,10}

Conclusions

This study concludes that the low self-awareness among adolescents regarding the risk of diabetes prevention is due to a lack of knowledge about the disease's preventive measures. This situation arises from insufficient information sources available to respondents in their surrounding environment. Therefore, it is crucial to enhance self-awareness about diabetes prevention risks among adolescents by improving knowledge so that understanding and self-awareness can develop, leading to healthy lifestyle practices and preventing diabetes in the future.

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