



The Relationship Between Self-Efficacy and Dietary Adherence Among Patients with Diabetes Mellitus at Jemursari Islamic Hospital, Surabaya

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ABSTRACT

Individuals with diabetes mellitus frequently experience difficulties adhering to recommended dietary regimens, resulting in unstable blood glucose levels and an increased risk of further complications. One significant factor influencing dietary adherence is self-efficacy, or patients' belief in their own ability to manage their diet. This paper investigates the relationship between self-efficacy and dietary adherence in outpatients with diabetes mellitus. This study employed a correlational analytical design with a cross-sectional approach. The population comprised 170 outpatients with type 1 and type 2 diabetes mellitus registered at the endocrine outpatient clinic of Jemursari Islamic Hospital, Surabaya. The sample consisted of 119 respondents, using simple random sampling. The instruments were the Diabetes Management Self-Efficacy Scale (DMSES) questionnaire to measure self-efficacy and the Dietary Behavior Questionnaire (DBQ) to assess dietary adherence. Data were analyzed using Spearman's Rank correlation test. The results indicated that half of the respondents (64; 50.4%) had low self-efficacy, and nearly half (55; 46.2%) had moderate diet adherence. Statistical analysis revealed a significant positive relationship between self-efficacy and dietary adherence in outpatients with diabetes mellitus ($p = 0.000$), with a strong correlation coefficient of 0.851. In conclusion, self-efficacy is associated with dietary adherence among outpatients with diabetes mellitus. The higher the self-efficacy, the greater the dietary adherence to the diabetes mellitus diet. Healthcare professionals should emphasize simple and repetitive educational approaches, particularly targeting older adult patients with low to moderate educational levels, to enhance patients' confidence in consistently and independently adhering to Diabetes dietary regimens.

INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disorder that requires lifelong management, including strict adherence to dietary recommendations (Pradita et al., 2025). Poorly controlled diabetes may lead to various complications, including microvascular and macrovascular disorders, which significantly increase morbidity and mortality rates (Susanti & Bistara, 2024). Therefore, effective diabetes management is essential to prevent disease progression and improve patients' quality of life (Nooseisai et al., 2021).

One of the key components of diabetes management is dietary regulation through the implementation of the 3J dietary principles, namely Quantity, Type, and Schedule of food intake (Bistara et al., 2026). Appropriate dietary management helps maintain stable blood glucose levels, reduce glycemic fluctuations, and prevent diabetes-related complications. Consuming the recommended caloric intake can prevent excessive glucose accumulation, while selecting appropriate food types, particularly complex carbohydrates, helps slow glucose absorption and minimize postprandial hyperglycemia. In addition, maintaining regular meal schedules contributes to better glycemic control (Giajati & Kusumaningrum,

2020). However, maintaining adherence to dietary recommendations remains a major challenge for many patients with diabetes.

The prevalence of diabetes continues to increase globally. According to the World Health Organization (WHO), the prevalence of diabetes increased by approximately 3% between 2000 and 2019 (Organization, 2025). Furthermore, the International Diabetes Federation (IDF) reported that approximately 463 million adults aged 20–79 years were living with diabetes worldwide in 2021 (Cahyaningrum, 2023). In Indonesia, Surabaya recorded the highest number of diabetes cases in East Java, increasing from 102,599 cases in 2017 to 115,460 cases in 2018 (Hasina et al., 2022). This increasing prevalence highlights the importance of improving self-management behaviors among patients with diabetes, particularly dietary adherence.

Previous studies have shown that dietary non-adherence remains a significant problem among patients with diabetes. Approximately 80% of patients with diabetes mellitus in Wonokromo District were reported to have inappropriate caloric intake (Manuel, 2016). Poor dietary adherence may result in unstable blood glucose levels, increased risk of complications, frequent hospital visits, and reduced quality of life. Several factors contribute to dietary non-adherence, including inadequate knowledge, lack of family support, social influences, and psychological factors such as stress, anxiety, and depression (Djaelan et al., 2022).

Among these factors, self-efficacy has been identified as one of the most important psychological determinants of successful diabetes self-management. Self-efficacy refers to an individual's belief in their ability to perform behaviors necessary to achieve desired outcomes. Patients with high self-efficacy are generally more motivated, persistent, and committed to maintaining healthy behaviors, including adhering to dietary recommendations, monitoring blood glucose levels, engaging in physical activity, and complying with treatment plans (Ting et al., 2025). Conversely, patients with low self-efficacy often experience difficulties maintaining consistent self-care behaviors.

According to the Indonesian Endocrinology Association (PERKENI), diabetes management consists of five major pillars: education, medical nutrition therapy, physical activity, pharmacological therapy, and blood glucose monitoring (PERKENI, 2021). Among these pillars, dietary management plays a central role because it directly influences glycemic control. Effective implementation of dietary recommendations requires not only knowledge but also confidence in one's ability to consistently manage eating behaviors. Consequently, self-efficacy may serve as an important predictor of dietary adherence among patients with diabetes mellitus.

Medical record data from Jemursari Islamic Hospital, Surabaya, showed a substantial increase in the number of patients diagnosed with diabetes mellitus, from 2,176 cases in 2017 to 4,910 cases in 2024.

Preliminary observations conducted at the hospital indicated that many patients still experienced difficulties adhering to dietary recommendations, while several patients reported low confidence in their ability to regulate their dietary intake consistently. These findings suggest that self-efficacy may play a crucial role in influencing dietary adherence among patients with diabetes mellitus.

Several previous studies have reported a significant relationship between self-efficacy and diabetes self-management behaviors, including dietary practices (Alharbi et al., 2023). However, limited studies have specifically examined the relationship between self-efficacy and dietary adherence among patients with diabetes mellitus in the Indonesian context, particularly in hospital-based settings. In addition, variations in socio-demographic characteristics, healthcare access, and local cultural factors may influence both self-efficacy and dietary adherence, making further investigation necessary.

Therefore, this study aimed to examine the relationship between self-efficacy and dietary adherence among patients with diabetes mellitus at Jemursari Islamic Hospital, Surabaya. Understanding this relationship is expected to provide evidence for developing interventions that strengthen patients' self-efficacy and improve adherence to dietary recommendations, ultimately contributing to better diabetes management outcomes.

METHOD

Study Design

This study employed an analytical correlational design with a cross-sectional approach to examine the relationship between self-efficacy and dietary adherence among patients with diabetes mellitus. Self-efficacy was treated as the independent variable, while dietary adherence served as the dependent variable. The study aimed to determine the association between patients' self-efficacy and adherence to the 3J dietary principles, namely Quantity, Type, and Schedule of food intake. Data on both variables were collected simultaneously at a single point in time without any intervention from the researchers.

Setting and Participants

The study was conducted at the Endocrine Outpatient Clinic of Jemursari Islamic Hospital, Surabaya. The target population consisted of all patients diagnosed with type 1 and type 2 diabetes mellitus who attended the clinic between August and October 2024. The total population comprised 170 patients. The required sample size was calculated using the Slovin formula with a margin of error of 5% ($\alpha = 0.05$), resulting in a minimum sample size of 119 respondents. Participants were selected using a simple random sampling technique, ensuring that each eligible member of the population had an equal probability of being included in the study.

Inclusion Criteria

Participants were eligible for inclusion if they:

1. Were diagnosed with type 1 or type 2 diabetes mellitus.
2. Were registered as outpatients at Jemursari Islamic Hospital, Surabaya.
3. Were aged 18 years or older.
4. Were able to communicate effectively and complete the questionnaire independently or with assistance.
5. Agreed to participate in the study by providing informed consent.

Exclusion Criteria

Participants were excluded if they:

1. Experienced severe cognitive impairment or communication difficulties.
2. Had incomplete questionnaire responses.
3. Withdrew from the study before completing data collection.

Research Instruments

Data were collected using two standardized questionnaires.

1. Diabetes Management Self-Efficacy Scale (DMSES)

Self-efficacy was measured using the Diabetes Management Self-Efficacy Scale (DMSES), adapted by Kurnia (2018). The instrument consists of 20 items assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater confidence in performing diabetes self-management behaviors.

2. Dietary Behavior Questionnaire (DBQ)

Dietary adherence was assessed using the Dietary Behavior Questionnaire (DBQ) developed by Primanda et al. (2011). The questionnaire consists of 16 items evaluating dietary behaviors related to calorie regulation, healthy food selection, meal scheduling, and challenges associated with dietary management. Higher scores reflect better adherence to dietary recommendations.

Both instruments had undergone validity and reliability testing prior to their use in this study.

Data Collection Procedures

Data collection was conducted after obtaining ethical approval from the relevant ethics committee. Eligible participants were approached during their outpatient visits and were provided with information regarding the study objectives, procedures, risks, and benefits. Written informed consent was obtained before participation. Questionnaires were distributed directly to respondents. Participants who experienced difficulties reading or understanding the questionnaire items received assistance from the researchers through standardized guidance without influencing their responses. Completed questionnaires

were reviewed for completeness before data entry. Data processing involved several stages, including editing, coding, scoring, data entry, data cleaning, and tabulation. All data were entered and analyzed using IBM SPSS Statistics version 25.0 for Windows.

Data Analysis

Descriptive statistics were used to summarize respondents' demographic characteristics, self-efficacy levels, and dietary adherence. Frequency distributions, percentages, means, and standard deviations were calculated as appropriate. Inferential analysis was performed using Spearman's rank-order correlation test because the study variables were measured on an ordinal scale and did not meet the assumption of normal distribution. The test was used to determine the strength and direction of the relationship between self-efficacy and dietary adherence among patients with diabetes mellitus. Statistical significance was established at a p-value of less than 0.05 ($p < 0.05$).

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee of Jemursari Islamic Hospital, Surabaya, under approval number 013/KEPK-RSISJS/II/2025. All research procedures were conducted in accordance with ethical principles, including respect for autonomy, confidentiality, anonymity, beneficence, and non-maleficence. Participation was voluntary, and respondents had the right to withdraw from the study at any stage without any consequences for their medical care.

RESULT

Almost half of the respondents were in the late elderly group, as many as 48 people (40.3%); followed by the elderly group, as many as 33 people (27.7%); early elderly, as many as 26 people (21.8%); and late adult, as many as 12 people (10.1%). By sex, most were female (64 people, 53.8%), while 55 were male (46.2%). In terms of education levels, most had moderate education (74 people, 62.2%), followed by basic (35 people, 29.4%) and high (10 people, 8.4%). Furthermore, most had suffered from diabetes for less than 5 years, namely 109 people (91.6%), and the remaining 10 people (8.4%) had suffered for 5 years and more (Table 1).

Table 1. Demographic characteristics Among Patients with Diabetes Mellitus at RSI Jemursari Surabaya

Variable	Total (n)	Percentage (%)
Respondent Characteristics		
Age		
36 – 45 years old	12	10,1
46 – 55 years old	26	21,8
56 – 65 years old	33	27,7
>65 years old	48	40,3
Gender		
Man	55	46,2
Woman	64	53,8
Level of education		

Elementary (Elementary – Middle School)	35	29,4
Middle School (High school)	74	62,2
High (Bachelor's)	10	8,4
Long Suffering		
< 5 years	109	91,6
> 5 years	10	8,4

Half of the respondents had low self-efficacy, totaling 64 respondents (50.4%). Furthermore, nearly half of the respondents (31, 26.1%) had a moderate level of self-efficacy, and a small proportion (24, 20.2%) had a high level of self-efficacy (Table 2).

Table 2. Self Efficacy Among Patients with Diabetes Mellitus at RSI Jemursari Surabaya

Self efficacy	Frequency	Percentage (%)
High	20	16,8
Moderate	39	32,8
Low	60	50,4
Total	119	100

Nearly half of the respondents (55; 46.2%) had moderate diet adherence, followed by 45 respondents (37.8%) with low adherence, while only 19 respondents (16.0%) had high adherence. These findings indicated that most respondents did not fully comply with the recommended diet for the management of diabetes mellitus (Table 3).

Table 3. Dietary Adherence Among Patients with Diabetes Mellitus at RSI Jemursari Surabaya

Dietary Adherence	Frequency	Percentage (%)
High	19	16
Moderate	55	46,2
Low	45	37,8
Total	119	100

Crosstabulation analysis showed that respondents with lower self-efficacy tended to have lower dietary adherence, while those with higher self-efficacy demonstrated better dietary adherence. Spearman Rank analysis revealed a significant positive relationship between self-efficacy and dietary adherence among patients with diabetes mellitus ($p < 0.001$; $r = 0.851$), indicating a very strong correlation. These findings suggest that higher self-efficacy is associated with greater adherence to dietary recommendations.

Table 4. Self-Efficacy and Diet Adherence Among Patients with Diabetes Mellitus at RSI Jemursari Surabaya

	Diet Adherence							
	High		Moderate		Low		Total	
Self efficacy	F	%	F	%	F	%	F	%
High	18	90.0	2	10.0	0	0.0	20	100
Moderate	1	2,6	38	97,4	0	0.0	39	100
Low	0	0,0	15	25.0	45	75.0	60	100
Total	19	16,0	55	46,2	45	37,8	119	100
Spearman's rank Correlation Coefficient (r) : 0,851 Significance (p) : 0,000								

DISCUSSION

Self-Efficacy Among Patients with Diabetes Mellitus

The present study found that most patients with diabetes mellitus demonstrated low levels of self-efficacy regarding dietary management. This finding suggests that many patients lacked confidence in their ability to consistently follow dietary recommendations and independently manage their condition. Self-efficacy is recognized as a key psychological determinant of diabetes self-management because it influences individuals' motivation, persistence, and confidence in performing health-related behaviors (Bandura, 2009).

Several respondent characteristics may explain the low level of self-efficacy observed in this study. First, a substantial proportion of respondents were older adults aged over 65 years. Previous studies have reported a negative relationship between age and self-efficacy among patients with type 2 diabetes mellitus, indicating that older individuals often experience lower confidence in managing their disease due to age-related declines in cognitive and physical functioning (Aseela et al., 2024). Reduced memory capacity, learning ability, and adaptability may limit patients' ability to implement complex self-management behaviors, including dietary regulation.

Gender may also contribute to variations in self-efficacy. More than half of the respondents in this study were female. Women often face multiple responsibilities related to household management, caregiving, and employment, which may increase psychological burden and reduce confidence in managing chronic illnesses. Consistent with Bandura's self-efficacy theory, emotional and physiological factors can influence an individual's perception of their capabilities. Qin et al. (2020) similarly reported lower self-efficacy among women with type 2 diabetes compared with men.

Educational attainment was another factor potentially associated with self-efficacy. Most respondents had low to moderate educational backgrounds. Higher educational levels are generally associated with better health literacy, greater access to health information, and improved understanding of disease management. Cui et al. (2019) reported that patients with higher educational attainment demonstrated better self-efficacy in managing diabetes-related behaviors, including dietary regulation, medication adherence, and physical activity. Therefore, limited educational attainment may restrict patients' ability to understand and apply diabetes self-management recommendations, thereby reducing self-efficacy.

Dietary Adherence Among Patients with Diabetes Mellitus

This study found that dietary adherence among patients with diabetes mellitus was predominantly moderate to low. Many respondents reported difficulties consistently following dietary recommendations, particularly regarding food selection, portion control, and adherence to dietary restrictions. These findings

indicate that dietary management remains a major challenge for patients with diabetes mellitus despite ongoing clinical monitoring.

Educational level may partially explain this finding. Although most respondents had completed secondary education, dietary adherence remained suboptimal. Rizqah & Basri (2018) suggested that education plays an important role in shaping health behaviors because individuals with higher educational attainment are generally better able to understand health information and apply disease-management recommendations. Health education significantly improved dietary adherence among patients with type 2 diabetes mellitus, highlighting the importance of knowledge acquisition in promoting adherence behaviors (Eshete et al., 2023; Fajriyah et al., 2024).

The duration of diabetes may also influence dietary adherence. Nearly half of the respondents had been diagnosed with diabetes for three to five years. Although a longer duration of illness theoretically provides greater opportunities to develop self-management skills and adapt to dietary restrictions, prolonged disease management may also lead to treatment fatigue. Treatment fatigue refers to the emotional and behavioral exhaustion associated with long-term disease management and may reduce patients' motivation to adhere to dietary recommendations consistently. This explanation is supported by Bistara et al. (2020), who reported that patients with long-standing diabetes may experience declining adherence without continuous educational and psychosocial support.

Relationship Between Self-Efficacy and Dietary Adherence

The findings revealed a statistically significant and strong positive relationship between self-efficacy and dietary adherence among patients with diabetes mellitus ($r = 0.851$, $p < 0.001$). This result indicates that patients with higher levels of self-efficacy were more likely to adhere to dietary recommendations than those with lower levels of self-efficacy.

This finding is consistent with Bandura's Social Cognitive Theory, which emphasizes that self-efficacy influences behavioral choices, effort, persistence, and resilience when facing challenges (Bandura, 2009). Individuals who believe in their ability to perform a specific behavior are more likely to initiate and maintain that behavior despite obstacles. In the context of diabetes management, patients with high self-efficacy are more confident in regulating food intake, controlling portion sizes, maintaining meal schedules, and resisting dietary temptations.

The findings are also consistent with previous studies. Jabbar (2024) reported a significant relationship between self-efficacy and dietary adherence among patients with diabetes mellitus in South Lampung Regency. Patients with low self-efficacy were more likely to exhibit poor adherence to diabetes treatment recommendations. Collectively, these findings suggest that self-efficacy is a critical factor influencing

adherence to self-management behaviors, including dietary regulation (Sayuti et al., 2024; Bistara, Wardani, et al., 2020).

Furthermore, educational attainment may indirectly strengthen the relationship between self-efficacy and dietary adherence. Patients with higher educational levels generally possess better health literacy, allowing them to understand diabetes management recommendations more effectively and develop greater confidence in implementing them. Ramadhani (2024) demonstrated that patients with adequate knowledge of diabetes management were more likely to adhere to dietary recommendations. Consequently, insufficient knowledge resulting from limited educational attainment may contribute to both lower self-efficacy and poorer dietary adherence.

Implications for Nursing Practice

The strong association between self-efficacy and dietary adherence identified in this study highlights the importance of incorporating self-efficacy enhancement strategies into diabetes care programs. Nurses should provide individualized education, motivational counseling, goal-setting interventions, and continuous support to strengthen patients' confidence in managing their dietary behaviors. Particular attention should be given to older adults, female patients, and individuals with lower educational backgrounds, as these groups may be at greater risk of low self-efficacy and poor dietary adherence. Strengthening self-efficacy may ultimately improve dietary adherence, glycemic control, and overall diabetes management outcomes.

CONCLUSION

Self-efficacy is associated with dietary adherence among outpatients with diabetes mellitus. The higher the self-efficacy, the greater the dietary adherence to the diabetes mellitus diet. Healthcare professionals should emphasize simple and repetitive educational approaches, particularly targeting older adult patients with low to moderate educational levels, to enhance patients' confidence in consistently and independently adhering to Diabetes dietary regimens.

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