

Self-Efficacy and Insulin Therapy Adherence Among Patients with Diabetes Mellitus: A Descriptive Study

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Abstract

Background: Diabetes Mellitus (DM) is a chronic condition with a steadily rising prevalence at both global and national levels and remains a significant public health concern in Aceh. Adherence to insulin therapy is often suboptimal and is thought to be influenced by psychological factors, particularly self-efficacy. **Aims:** This study aimed to describe the levels of self-efficacy and insulin therapy adherence among patients with DM at Dr. Zainoel Abidin Regional General Hospital, Banda Aceh. **Methods:** A descriptive design was employed, involving 85 respondents selected through consecutive sampling. Data were collected using the Diabetes Management Self-Efficacy Scale (DMSES) with a mean of 153,43±36,11 and the Morisky Medication Adherence Scale-8 (MMAS-8) with a mean of 7,20±1,16. **Results:** The findings revealed that the majority of respondents had a mean age of 64 years, were female (60%), and had been living with DM for more than five years (64.7%). Most participants demonstrated low self-efficacy (61.2%), while insulin adherence was predominantly at a moderate level (52.9%). **Conclusion:** Healthcare professionals need to enhance their self-efficacy through ongoing education and support, which is essential for improving insulin therapy adherence and ensuring optimal diabetes management.

Keywords: diabetes mellitus, adherence, self-efficacy, insulin therapy



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Introduction

Diabetes mellitus (DM), more commonly known as diabetes, is a disease whose incidence has been steadily rising over the years in nearly every country around the world. The number of people with diabetes is reported to have reached 830 million in 2022, with the highest number of cases occurring in low- and middle-income countries compared to high-income countries (Diabetes, 2024). The number of people with diabetes in Indonesia is estimated to be 10.3 million out of a total population of 240 million, ranking sixth in the world in terms of the number of people with diabetes (Kementerian Kesehatan Republik Indonesia, 2018). Meanwhile, in Aceh, the number of people with diabetes is reported to be 154,000

cases (Rahma, 2023). Diabetes mellitus is a chronic condition caused by a decrease or increase in insulin production due to damage to the pancreas, which disrupts the body's ability to produce the insulin it needs (IDF, 2025). Controlling blood glucose levels in patients with diabetes requires insulin therapy for both Type 1 and Type 2 diabetes. Many patients do not adhere to their insulin therapy. This poses a significant risk to patients. Patient commitment, manifested through adherence and motivation, influences self-efficacy in patients with diabetes (PERKENI, 2021).

Self-efficacy in patients with diabetes can influence their behavior and motivate them to achieve their goals (Martadinata & Soares, 2024). In 1994, Albert Bandura

was the first to propose the theory of self-efficacy, which refers to an individual's belief in their own ability to achieve a particular goal (Bandura, 1997). Low self-efficacy has a significant impact on patients' health. This is linked to patients' non-adherence to proper and regular insulin therapy (Wahyuni & Darma, 2021).

Treatment adherence among patients with diabetes is also influenced by their level of knowledge, as well as various digital tools that can be used to support and motivate patients in their treatment (Dewiyuliana & Syah, 2022). Adherence to insulin therapy requires support not only from the patient but also from family, the community, and healthcare professionals, thereby improving the patient's health outcomes (Permatasari et al., 2020). In addition, choosing the right method can help patients and their families improve their health (Dewiyuliana et al., 2024).

Adherence to insulin therapy remains a problem in Aceh; of 354 cases of diabetes mellitus, 44.4% of patients had low adherence. Based on the above, the author was interested in investigating the levels of self-efficacy and insulin adherence among patients with diabetes mellitus at Dr. Zainoel Abidin Regional General Hospital in Banda Aceh.

Methods

This study employed a descriptive design to examine self-efficacy and adherence to insulin therapy among patients with diabetes mellitus. The study population consisted of all patients with diabetes mellitus undergoing insulin therapy at the study site with a total population of 2,440 in Juli 2023 to Juli 2024. A total of 85 respondents were included using a consecutive sampling technique, whereby all patients who met the inclusion criteria and attended the study site during the specified data collection period were recruited consecutively until the end of the study period. Inclusion criteria included willingness to participate, undergoing insulin therapy, and the ability to communicate effectively.

The instruments used in this study were the Diabetes Management Self-Efficacy Scale (DMSES) and the Morisky Medication Adherence Scale-8 (MMAS-8) questionnaires. The DMSES is a validated instrument designed to assess patients' self-confidence in carrying out diabetes management activities, including dietary control, physical activity, blood glucose monitoring, and medication management (Huang et al., 2021). Validity testing using Cronbach's alpha showed an instrument coefficient value of 0.921 with a reliability value level of more than 0.6. (Dwi et al., 2025). Meanwhile, the MMAS-8 is a widely used self-report questionnaire that contains medication adherence behavior through eight items that address common barriers and patterns of non-adherence

(Kishor et al., 2024). This instrument is used to measure patients' self-efficacy in managing diabetes and their adherence to insulin therapy. The results of the instrument validity test obtained a Cronbach's Alpha value of 0.622, higher than the minimum value limit of 0.60, indicating that the MMAS-8 instrument has good internal consistency (Jasmin et al., 2025).

Data collection was carried out directly by distributing questionnaires to eligible respondents after first explaining the purpose of the study and obtaining informed consent. The collected data were then processed through editing, coding, and entry into SPSS software. Univariate analysis was performed to describe the frequency distribution and percentage of each variable, namely self-efficacy and insulin therapy adherence. The analysis results are presented in the form of frequency distribution tables to provide an overview of the characteristics of the variables under study. The research has received ethical approval from the Health Research Ethics Commission, Zainoel Abidin Hospital, Banda Aceh, Indonesia. based on ethical certificate 269A/ETIK-RSUDZA/2024.

Results

Based on Table 1, the average age of patients with diabetes mellitus is 64 years; the majority are female (60%), have had diabetes for more than 5 years (64.7%), and receive insulin injections ≤ 2 times a day (55.3%).

Table 1. Demographic Data (n=85)

Characteristics	f	%
Age (M $\pm$ SD)	63,69 $\pm$ 9,7	
Gender		
Man	39	40,0
Female	46	60,0
Duration of diabetes		
≤ 5 years	30	35,3
> 5 years	55	64,7
Insulin injection schedule		
≤ 2 times a day	47	55,3
> 2 times a day	38	44,7

Based on Table 2, the frequency of respondents according to the Diabetes Management Self-Efficacy Scale (DMSES) questionnaire data shows that the low category is the most common (61.2%).

Table 2. Frequency Distribution of Respondents Based on Data from the Diabetes Management Self-Efficacy Scale (DMSES) Questionnaire (n=85)

DMSES	f	%	M $\pm$ SD
High	33	38,8	153,43 $\pm$ 36,11
Low	52	61,2	

Based on Table 3, the frequency of responses to the Morisky Medication Adherence Scale-8 (MMAS-8) questionnaire was predominantly in the “Moderate” category (52.9%).

Table 3. Frequency Distribution Based on Data from the Morisky Medication Adherence Scale 8 (MMAS-8) Questionnaire (n=85)

MMAS	f	%	M±SD
High	21	24,7	7,20 ± 1,16
Medium	45	52,9	
Low	19	22,4	

Discussion

Self Efficacy

The results of the study indicate that the majority of respondents—61.2%—exhibited low self-efficacy, while only 38.8% demonstrated high self-efficacy. The researchers hypothesize that this low self-efficacy is influenced by the characteristics of the respondents, the majority of whom are elderly (average age 64 years) and have had diabetes for more than 5 years. Long-term chronic illness can lead to psychological fatigue, decreased motivation, and feelings of helplessness in managing the disease, thereby affecting self-confidence in performing self-care.

Self-efficacy refers to an individual’s belief in their ability to perform certain actions, including those related to diabetes management such as dietary management, physical activity, blood glucose monitoring, and insulin therapy. The DMSSES instrument used in this study was specifically designed to measure these aspects and has been proven to be valid and reliable in the Indonesian context (Marlina et al., 2024).

The researchers also assumed that the advanced age of the respondents contributed to their low self-efficacy. Older adults tend to experience a decline in cognitive and physical functioning that can affect a patient’s ability to understand and adhere to diabetes therapy. In addition, the presence of complications or previous experiences of failing to control blood sugar can undermine a patient’s confidence in managing their condition.

The results of this study are consistent with research by Subkhan et al. (2024), which states that low self-efficacy in patients with diabetes is often associated with a lack of knowledge and education regarding diabetes management. The study also shows that educational interventions can significantly improve patients’ self-efficacy. Thus, the low self-efficacy observed in this study is likely also influenced by the lack of education received by the patients. In addition, other studies have shown that self-efficacy is closely linked to adherence to diabetes treatment. Individuals with low self-efficacy tend to have

little confidence in their ability to consistently follow their treatment regimen. This is supported by research (Kusuma & Indrayanti, 2024) which found a significant association between self-efficacy and medication adherence in patients with diabetes mellitus.

The findings showed that the mean age of respondents was 63.69 ± 9.7 years, indicating that most participants were older adults. This finding is consistent with the epidemiological characteristics of type 2 diabetes mellitus, which is more prevalent among older populations due to age-related physiological changes, including decreased insulin sensitivity, impaired pancreatic β -cell function, and the accumulation of metabolic risk factors over time. Older adults often require more intensive disease management and are more likely to receive insulin therapy because of progressive deterioration in glycemic control.

Regarding disease duration, most respondents (64.7%) had been living with diabetes for more than five years, while 35.3% had a disease duration of five years or less. A longer duration of diabetes is commonly associated with disease progression, increased risk of complications, and a greater likelihood of requiring insulin therapy to achieve optimal glycemic control. Patients who have lived with diabetes for a longer period may develop greater experience and knowledge regarding disease management; however, prolonged disease duration can also increase treatment burden and challenges in maintaining adherence. Therefore, both age and duration of diabetes are important factors to consider when evaluating self-efficacy and adherence to insulin therapy among patients with diabetes mellitus.

In addition to age and disease duration, cultural factors may also influence diabetes self-management behaviors among patients in Aceh. Acehnese society is characterized by strong family ties, communal values, and a religious lifestyle, which can provide substantial social and emotional support for individuals living with chronic diseases. Family involvement in daily care, medication reminders, dietary practices, and healthcare decision-making may contribute positively to patients’ confidence in managing their diabetes and adhering to insulin therapy. Furthermore, religious beliefs may encourage positive health behaviors through the perception that maintaining health is part of one’s responsibility and stewardship. However, cultural dietary habits, including the frequent consumption of carbohydrate-rich foods and sweet beverages commonly found in local cuisine, may present challenges to optimal glycemic control. Therefore, diabetes education and intervention programs should consider local cultural and religious contexts to enhance their effectiveness and acceptability among patients in Aceh.

Furthermore, self-efficacy has also been shown to play a role in insulin adherence. A study by Agustina et al. (2020) indicates that patients with high levels of self-efficacy tend to be more compliant with self-administered insulin. Therefore, the low levels of self-efficacy observed in the majority of respondents in this study serve as an important indicator that warrants attention, as they may impact the success of long-term therapy.

Insulin therapy adherence

The study results show that the majority of respondents had moderate insulin therapy adherence (52.9%), followed by high adherence (24.7%) and low adherence (22.4%). The researchers hypothesize that this suboptimal adherence is influenced by advanced age, long duration of the disease, and insulin injection frequency, which is mostly ≤ 2 times a day. Although injection frequency is relatively low, psychological factors such as fear, boredom, and burnout can still affect patient adherence.

Conceptually, insulin therapy adherence refers to a patient's behavior in following the treatment recommendations established by healthcare professionals, including dosage, timing, and method of insulin administration. The MMAS-8 instrument used in this study is a widely used measurement tool globally and has demonstrated good validity and reliability in assessing treatment adherence.

Researchers also hypothesized that the duration of diabetes (>5 years) could be a factor influencing adherence. On the one hand, prolonged experience may enhance patients' understanding of their condition; on the other hand, it may lead to burnout from long-term treatment, resulting in decreased adherence. This explains why the majority of respondents fell into the moderate adherence category rather than the high adherence category.

The results of this study are consistent with previous research (Muhammad et al., 2025), which states that insulin therapy adherence is influenced by various factors such as disease duration, psychological factors, and social support. The study also emphasizes that suboptimal adherence remains a common problem among patients with type 2 diabetes.

In addition, insulin therapy adherence is closely linked to patients' self-efficacy. Patients with high self-efficacy tend to be better able to adhere to their treatment consistently, including insulin use. This is supported by previous research showing a positive association between self-efficacy and treatment adherence in patients with diabetes mellitus (Anti & Sulistyanto, 2022)

Thus, based on the results of this study, it can be concluded that the level of insulin therapy adherence among patients is still suboptimal and is influenced by

various factors, particularly psychological aspects such as self-efficacy. Therefore, interventions are needed that focus not only on medical aspects but also on enhancing patients' self-confidence through education and ongoing support.

Conclusion

Based on the Diabetes Management Self-Efficacy Scale (DMSES) questionnaire, the self-efficacy of patients with diabetes mellitus was predominantly in the low and high categories. Meanwhile, data from the Morisky Medication Adherence Scale 8 (MMAS-8) questionnaire showed that adherence to insulin therapy among patients with diabetes mellitus was predominantly in the moderate category.

Declaration of Conflicting Interest

The authors declare no conflict of interest.

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Author's Contribution

DY Conceptualization, Data Curation, Formal Analysis, Methodology, Validation, Visualization, Writing - Original Draft, Review & Editing; **NA** Conceptualization, Investigation, Methodology, Validation, and Writing - Original Draft, Review & Editing; **LH** Conceptualization, Investigation, and Writing - Original Draft,

Data Availability Statement

All data generated or analyzed during this study are included in this published article.

Declaration of Use of AI in Academic Writing

The author used ChatGPT/Gemini in the writing process to improve readability and remove grammatical errors. However, he took full responsibility for the content.

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