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## The Relationship of Self-Efficacy and Family Support with Medication Adherence in Patients with Diabetes Mellitus

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### ABSTRACT

**Background:** Medication adherence is a crucial component in achieving glucose control and reducing the risk of long-term complications. Non-adherence to medication remains a common issue among individuals with diabetes. Psychosocial factors, particularly family support and self-efficacy, can significantly impact patient adherence to prescribed treatment protocols. **Objective:** This study aimed to examine the relationship between family support, self-efficacy, and medication adherence in individuals with diabetes mellitus. **Methods:** A cross-sectional study was conducted involving patients with diabetes mellitus at the Chania Care Center in June 2026. Data were collected using questionnaires, including the Hensarling Diabetes Family Support Scale (HDFSS), the Self-Efficacy for Diabetes Scale (SED), and the 8-item Morisky Medication Adherence Scale (MMAS-8). Descriptive data were analyzed using frequencies and percentages, while relationships between variables were evaluated using the Spearman Rank correlation test, with a significance threshold of  $p < 0.05$ . **Results:** A significant correlation was found between family support, self-efficacy, and medication adherence in individuals with diabetes mellitus ( $p < 0.05$ ). Participants who received greater family support and demonstrated higher self-efficacy tended to exhibit better adherence to prescribed medications. Self-efficacy was identified as the most influential factor associated with medication adherence after adjusting for potential confounding factors. **Conclusion:** Family support and self-efficacy are significant psychosocial factors associated with medication adherence in patients with diabetes mellitus. Strategies that enhance family involvement and strengthen patients' confidence in managing their treatment can help improve medication adherence, thereby supporting more effective diabetes management and health outcomes.

**Keywords:** DM; family support; self-efficacy; medication adherence

### Background

Diabetes mellitus (DM) is a long-term metabolic condition in which blood glucose concentrations remain abnormally high due to inadequate insulin secretion, reduced sensitivity of body tissues to insulin, or the coexistence of both mechanisms. As a lifelong condition, diabetes affects people across all age groups, sexes, and regions of the world. Owing to its high prevalence and association with serious complications, DM remains one of the leading contributors to global morbidity and mortality (1). Successful diabetes management depends not only on pharmacological therapy but also on patient adherence to ongoing treatment. Strict adherence to antidiabetic treatments is pivotal for establishing superior glycemic control, hence lessening the risk of complications from diabetes and minimizing patients' direct healthcare expenses (2). Recent studies reveal that medication compliance in diabetic patients continues to be an issue across multiple nations, including Indonesia, influenced by numerous factors. Consequently, compliance with prescribed drugs is crucial for sustaining glycemic regulation and minimizing the likelihood of problems. Moreover, familial support significantly contributes to promoting and enhancing medication compliance in individuals with type 2 diabetes mellitus (3).

The International Diabetes Federation (IDF) Diabetes Atlas (2025 edition) estimates that the worldwide prevalence of diabetes in adults aged 20–79 is roughly 11.1%, indicating that about 589 million adults were afflicted with the condition in 2024, with over 90% of these cases classified as Type 2 Diabetes Mellitus, the predominant clinical variant of the disease. The IDF also notes a significant proportion of undiagnosed cases, with global trends indicating a continuing rise in the disease burden driven by

demographic and lifestyle changes. Indonesia ranks fifth among the top 10 countries for the number of adults (aged 20–79) with diabetes, with a prevalence of 20.4% in 2024, a figure projected to reach 28.6% by 2050 (4).

Medication adherence refers to the extent to which an individual consistently follows the treatment regimen and health-related recommendations that have been mutually established with a healthcare professional. Previous studies have reported that only 34.14% of patients adhered to their prescribed antidiabetic medications, indicating a relatively low level of medication adherence compared with findings from similar populations. Inadequate adherence was notably linked to an increased number of unhealthy days, underscoring its detrimental effect on patients' overall health and quality of life (2). Research evidence indicates that approximately half of patients, particularly those with type 2 diabetes mellitus, do not consistently follow their prescribed antidiabetic medication regimens. Poor adherence may arise from a range of barriers, including treatment-related challenges, patient-related factors, and difficulties associated with long-term diabetes management (5).

Contemporary research indicates that familial support is a significant psychosocial factor influencing medication compliance in individuals with T2DM. Family members influence adherence through emotional encouragement, practical assistance, reminders, health education, and shared responsibility for diabetes self-management (6)(8). Patients who receive strong family support are more likely to achieve optimal medication adherence and better glycemic control, whereas inadequate family involvement has been associated with poor adherence and suboptimal diabetes outcomes. Successful diabetes management depends not only on the appropriate treatment regimen but also on patients' ability to consistently follow the recommended therapy. This adherence may be substantially strengthened by supportive family involvement, which can encourage patients to maintain their treatment routines and cope with the demands of long-term diabetes care (9).

One of the most potent psychological indicators of medication adherence in diabetic patients, particularly those with type 2 diabetes mellitus (T2DM), is self-efficacy. Patients demonstrating increased self-efficacy show enhanced confidence in their proficiency to accurately administer medications, organize treatment plans, navigate challenges, and uphold diabetes self-management habits. As per Social Cognitive Theory, self-efficacy affects health habits by bolstering an individual's assurance in doing essential tasks despite difficulties. In diabetic care, individuals exhibiting strong self-efficacy are more adept at assimilating medication schedules into their everyday activities, managing multifaceted treatment plans, remembering their dosages, and remaining compliant even when faced with adverse effects or lifestyle changes (10). Previous studies have demonstrated that self-efficacy plays a significant role in influencing medication adherence (11). A previous study found among respondents with low self-efficacy, most were non-adherent to their prescribed medication regimen (64.7%), whereas only 35.3% adhered to treatment. In contrast, among those with high self-efficacy, 75% were adherent to their medication, while only 25% were non-adherent (12). Significant family backing and strict adherence to oral antidiabetic medications are vital for augmenting the quality of life and holistic health of patients suffering from type 2 diabetes mellitus (13).

Accordingly, this study was undertaken to investigate whether family support and self-efficacy are associated with medication adherence among individuals diagnosed with diabetes mellitus. This study offers several important contributions. First, it simultaneously investigates the influence of both family support and self-efficacy, representing external and internal determinants of medication adherence, respectively. Second, unlike previous studies that have primarily examined these factors independently, this study evaluates their combined association with medication adherence, providing a more comprehensive understanding of patients' adherence behavior. Third, the findings are expected to generate evidence that can inform the development of family-centered and self-efficacy-enhancing interventions to improve medication adherence and optimize diabetes management. Ultimately, this study may contribute to the design of evidence-based nursing practices and healthcare strategies aimed at reducing diabetes-related complications and improving patients' health outcomes.

## Methods

This investigation applied a quantitative, cross-sectional correlational design to explore the connections among family support, self-efficacy, and medication compliance in diabetic patients. The investigation was place in the Chania Care Center in Kediri Regency, Indonesia, during June 2026.

The focus group included persons with a verified diagnosis of diabetes mellitus who obtained treatment at the Chania Care Center during the timeframe of the study. Participants were recruited consecutively according to predetermined eligibility criteria. Individuals were eligible if they had been diagnosed with diabetes mellitus for a minimum of six months, were 18 years of age or older, were currently receiving antidiabetic pharmacological therapy, had adequate communication abilities, and voluntarily agreed to participate. Patients experiencing substantial cognitive impairment or serious health conditions that could interfere with their ability to understand or complete the study questionnaires were excluded.

Data collection was conducted using standardized and validated instruments to ensure consistency in the measurement of the study variables. Family support was evaluated using the Family Support Questionnaire, while patients' confidence in managing their diabetes was assessed with the DMSES. Medication-taking behavior was measured using MMAS-8. In addition, relevant sociodemographic and clinical information, including participants' age, sex, educational attainment, duration of diabetes, and current treatment regimen, was obtained.

The acquired data underwent processing and analysis with SPSS version 26. The study participants were characterized by descriptive analysis, which also showcased the distribution of the measured variables. The Spearman rank correlation test was later employed for inferential analysis to evaluate the connections between family support, self-efficacy, and medication adherence. A p-value of 0.05 indicated statistical significance.

Prior to involvement, every respondent was briefed about the research and granted their written informed consent. Participants' privacy was protected throughout the research process, with confidentiality and anonymity of the collected information strictly maintained.

## Results

Table 1 encapsulates the sociodemographic and clinical attributes of the people involved in the investigation. The factors outlined encompass age, gender, educational level, employment status, marital condition, duration of diabetes mellitus, and monthly household income.

**Table 1. Characteristics of Diabetes Mellitus Patients at Canian Care Center**

| Characteristics    | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| Age                |           |                |
| <=40 years old     | 6         | 12,8           |
| 41-55 years old    | 17        | 20.0           |
| 56-65 years old    | 16        | 8.8            |
| >65 years old      | 8         | 1.9            |
| Sex                |           |                |
| Male               | 20        | 42,6           |
| Female             | 27        | 57,4           |
| Education          |           |                |
| No Education       | 7         | 14,9           |
| Elementary         | 10        | 21,3           |
| Junior High School | 9         | 19,1           |
| Senior High Scholl | 17        | 36,2           |
| Diploma/ Bachelor  | 4         | 8,5            |
| Occupation         |           |                |
| Houshold mother    | 12        | 25,5           |
| Farmer             | 9         | 19,1           |
| Private employee   | 20        | 42,6           |

| Characteristics            | Frequency | Percentage (%) |
|----------------------------|-----------|----------------|
| Self-employed              | 3         | 6,4            |
| Civil Servant              | 3         | 6,4            |
| Marital Status             |           |                |
| Not married yet            | 12        | 25,5           |
| Married                    | 32        | 68,1           |
| Widow/widower              | 3         | 6,4            |
| Diabetes Mellitus Duration |           |                |
| <1 year                    | 13        | 27,7           |
| 1-5 year                   | 23        | 48,9           |
| >5 year                    | 11        | 23,4           |
| Family Income              |           |                |
| <1 million                 | 7         | 14,9           |
| 1-3 million                | 23        | 48,9           |
| >3 million                 | 17        | 36,2           |

According to the demographic profile of 47 participants, females constituted the majority at 57.4%. Most participants were aged 41–55 years (36.2%), followed closely by those aged 56–65 years (34.0%). In terms of education, the largest proportion had completed senior high school (36.2%). Regarding occupation, most respondents worked as private employees (42.6%). The majority were married (68.1%). Almost half of the respondents had been diagnosed with diabetes mellitus for 1–5 years (48.9%). In addition, the largest proportion reported a monthly family income of 1–3 million rupiah (48.9%).

**Table 2. Specific Data of Diabetes Mellitus Patients at Canian Care Center**

| Specific Data     | Frequency | Percentage (%) |
|-------------------|-----------|----------------|
| Family Support    |           |                |
| Poor              | 9         | 31,9           |
| Moderate          | 23        | 40,4           |
| Good              | 15        | 27,7           |
| Self Efficacy     |           |                |
| Low               | 15        | 31,9           |
| Moderate          | 19        | 40,4           |
| Good              | 13        | 27,7           |
| Medication Adhere |           |                |
| Low               | 14        | 29,8           |
| Moderate          | 20        | 42,6           |
| High              | 13        | 27,7           |

Based on the descriptive analysis, the majority of respondents reported moderate family support, accounting for 23 participants (40.4%). With respect to self-efficacy, most respondents showed a moderate level, comprising 19 individuals (40.4%). In terms of medication adherence, the majority of respondents had moderate medication adherence, comprising 20 participants (42.6%).

**Table 3 Statistic Spearman Rank Test Relationship Self Efficacy and Mediction Adhere among Diabetics at Canian Care Center**

|                   |          | Self Efficacy |          |      | Total |
|-------------------|----------|---------------|----------|------|-------|
|                   |          | Low           | Moderate | High |       |
| Medication Adhere | Low      | 10            | 3        | 1    | 14    |
|                   | Moderate | 5             | 10       | 5    | 20    |
|                   | High     | 0             | 6        | 7    | 13    |
| Total             |          | 15            | 19       | 13   | 47    |

p-value= 0,000, r=0,585\*\*

The examination revealed a statistically significant positive correlation between self-efficacy and

adherence to medicine ( $p < 0.001$ ;  $r = 0.585$ ). This finding suggests that patients with greater confidence in their ability to manage diabetes and follow therapeutic recommendations tend to demonstrate more consistent adherence to their prescribed medication regimens. The correlation coefficient ( $r = 0.585$ ) suggests a moderate to strong positive relationship, meaning that as patients' confidence in their ability to manage their illness and follow treatment recommendations increases, their adherence to prescribed medication also tends to improve.

Table 4 Statistic Spearman Rank Test Relationship Family Support and Medication Adhere among Diabetics at Canian Care Center, Kediri, 2026

|                   |          | Family Support |          |      | Total |
|-------------------|----------|----------------|----------|------|-------|
|                   |          | Poor           | Moderate | Good |       |
| Medication Adhere | Low      | 5              | 9        | 0    | 14    |
|                   | Moderate | 4              | 11       | 5    | 20    |
|                   | High     | 0              | 3        | 10   | 13    |
| Total             |          | 9              | 23       | 15   | 47    |

p-value= 0,000, r=0,614\*\*

The correlation study demonstrated a statistically significant positive association between familial support and adherence to medicine ( $p < 0.001$ ,  $r = 0.614$ ). The correlation coefficient ( $r = 0.614$ ) signifies a robust positive connection, implying that more family support correlates with improved medication adherence among participants.

## Discussion

### Relationship Self Efficacy and Medication Adhere among Diabetics

The study indicates a statistically significant positive relationship between self-efficacy and adherence to medication in diabetic patients ( $p < 0.001$ ;  $r = 0.585$ ), implying that individuals with increased confidence in their management abilities demonstrate superior compliance with prescribed medications. The correlation coefficient of 0.585 suggests a positive relationship of moderate to strong strength, meaning that higher patient self-efficacy corresponds to higher adherence to the prescribed medication regimen. Cross-tabulation results further reveal that the majority of respondents with low self-efficacy exhibited low medication adherence (10 out of 15 respondents; 66.7%), whereas respondents with high self-efficacy were predominantly characterized by high medication adherence (7 out of 13 respondents; 53.8%), with no respondents in the high self-efficacy group demonstrating low adherence. These results suggest that a person's confidence in their capacity to control their illness is a vital element influencing compliance with therapeutic regimens.

These research results correspond with Bandura's Social Cognitive Theory, which asserts that self-efficacy refers to an individual's confidence in their capacity to execute a certain behavior and maintain it in the face of challenges. Patients with diabetes who possess elevated self-efficacy generally exhibit greater confidence in managing their prescription regimens, handling side effects, adhering to a nutritious diet, participating in physical exercise, and autonomously tracking blood glucose levels. In contrast, those with diminished self-efficacy are more susceptible to despair and exhibit a lack of confidence in their capacity to maintain long-term treatment, thereby increasing their likelihood of non-compliance. These results are corroborated by a systematic review that concludes self-efficacy is a vital psychological factor in effective diabetic self-management (14).

This research aligns with the conclusions drawn by Jiang et al., who performed a comprehensive review and meta-analysis encompassing 16 studies focused on self-efficacy-oriented teaching for diabetic patients. Their results demonstrated that interventions focusing on enhancing self-efficacy improved self-management, quality of life, and patient knowledge, while also lowering HbA1c levels. Increased self-efficacy fostered greater patient confidence in making treatment-related decisions and greater consistency in adhering to the therapeutic regimens prescribed by healthcare professionals (14).

Self-efficacy is a key component of patient empowerment that is consistently associated with improved medication adherence across various chronic diseases, including diabetes. Individuals with elevated self-assurance in their capacity to handle their ailments are more adept at surmounting treatment

obstacles, demonstrate heightened intrinsic desire, and display more favorable health practices than those with diminished self-efficacy. Greater self-efficacy and a stronger internal health locus of control are generally associated with better adherence to prescribed medications. In contrast, externally oriented health-control beliefs tend to show either negative or inconsistent associations with adherence. Specifically, beliefs that health outcomes are primarily determined by chance or divine influence are often linked to poorer medication adherence, whereas the influence of powerful others produces mixed findings. An exception is the doctor-related health locus of control, which has been positively associated with patients' adherence to medication regimens. Self-efficacy functions as a mediating factor in the relationship between medication literacy and adherence to prescribed treatments in individuals with type 2 diabetes mellitus, indicating that patients' confidence in their treatment management may partially elucidate the connection between sufficient medication knowledge and improved adherence. Therefore, interventions aimed at strengthening self-efficacy are important to enhance patients' confidence and ability to adhere to prescribed antihyperglycemic medication regimens (15).

Other studies on factors influencing medication adherence among diabetic patients also indicate that psychological factors specifically self-efficacy play a crucial role in shaping adherence behavior. Patients who are confident in their ability to manage their condition find it easier to maintain a consistent medication regimen, whereas low self-confidence is often associated with a lack of motivation, forgetfulness regarding medication intake, and a reduced ability to cope with the challenges of long-term therapy (8).

The positive relationship identified in this study indicates that medication adherence among patients with diabetes is influenced not only by clinical aspects and demographic characteristics but also significantly by psychological factors, specifically self-efficacy. Patients with high self-efficacy tend to view treatment as something within their control, leading to greater discipline in adhering to therapy, even when faced with the prospect of lifelong treatment. Conversely, patients with low self-efficacy are more prone to doubt, anxiety, and a loss of motivation when encountering treatment-related challenges. Therefore, nursing interventions should extend beyond merely providing education on medication use; they should also aim to enhance self-efficacy through counseling, realistic goal setting, positive feedback, self-management skills training, and the involvement of family as a support system. This methodology is anticipated to enhance medication compliance, consequently refining glycemic regulation and the overall well-being of individuals with diabetes. Family support is a key factor in successful disease control. It is recommended that families continue to develop health management skills, healthcare providers improve family education, and community health centers strengthen ongoing education programs (16).

### **Relationship Family Support and Medication Adhere among Diabetics**

The findings of the study reveal a substantial correlation between familial support and adherence to medicine in individuals with diabetes mellitus ( $p < 0.001$ ;  $r = 0.614$ ). The correlation coefficient of 0.614 indicates that more family support for the patient correlates with enhanced adherence to the treatment plan. Cross-tabulation analysis indicates that a significant proportion of participants with strong familial support displayed elevated medication adherence (66.7%), while those with inadequate familial support generally showed diminished adherence. These results underscore the vital importance of families in assisting diabetic individuals to sustain adherence to a treatment plan that necessitates regular and ongoing compliance. Familial assistance is crucial in the management of type 2 diabetes mellitus, since it can enhance patients' quality of life and foster improved compliance with prescribed therapies.

The research by Mayberry and Osborn corroborates these findings, indicating that favorable familial support correlates with improved medication adherence in individuals with type 2 diabetes mellitus. The study explains that family members who provide attention, emotional support, and assistance with disease management can enhance a patient's ability to adhere to the prescribed treatment regimen (17). Another study conducted by Busebaia et al. an umbrella review of 19 studies concluded that the family is a primary source of social support contributing to successful diabetes management. Family support has been shown to assist patients in adhering to treatment, managing their diet, engaging in physical activity, and maintaining the self-care behaviors necessary to control diabetes (18).

A robust correlation exists between familial support and adherence to medicine, as diabetes mellitus is a persistent illness necessitating prolonged treatment and ongoing lifestyle modifications. In this context, the family serves as the primary support system, helping patients remember medication schedules,

providing motivation when patients feel weary of therapy, accompanying them to medical check-ups, and assisting in meeting treatment needs. The emotional and instrumental support provided by the family can foster a greater sense of responsibility in patients regarding their health, thereby improving medication adherence. Conversely, a lack of family support can leave patients feeling less motivated to adhere consistently to their treatment regimen. Hence, increasing family involvement in diabetes education and management strategies is crucial for fostering medication adherence and achieving effective control of diabetes mellitus. Medication adherence in diabetic patients is significantly affected by social support and self-efficacy. Social support may enhance adherence by strengthening patients' self-efficacy in managing their treatment. Therefore, healthcare professionals working with individuals with diabetes should consider these factors when developing health promotion interventions tailored to patients' needs and treatment-related challenges (19).

Notwithstanding these constraints, the results of this research hold significant ramifications for diabetes management and nursing methodologies. Strategies to improve medication adherence should prioritize strengthening family support and enhancing patients' self-efficacy through family-centered education, individualized counseling, and diabetes self-management programs. Integrating family involvement with interventions that build patients' confidence in managing their treatment may improve adherence to antidiabetic medication, optimize glycemic control, and reduce the risk of diabetes-related complications (20). Furthermore, reinforcing patient education and supportive healthcare services may enhance long-term adherence and overall diabetes management.

## Conclusions and Recommendations

The results of this research demonstrate that familial support and self-efficacy are crucial factors influencing medication compliance in patients with diabetes mellitus. Individuals who received enhanced familial support and had more self-assurance in their capacity to handle their illness were more likely to adhere to their prescribed antidiabetic regimen. These results underscore the need for a comprehensive approach to improving medication adherence that incorporates both the supportive role of the patient's social environment and the individual's psychological capacity to manage long-term diabetes treatment. Family support provides practical, emotional, and motivational assistance that facilitates adherence, while self-efficacy enhances patients' confidence in managing their treatment and overcoming barriers to consistent medication use.

Based on these findings, healthcare professionals, particularly nurses, should implement interventions that actively involve family members in diabetes management and incorporate strategies to strengthen patients' self-efficacy through individualized education, counseling, motivational interviewing, and self-management training. Family-centered diabetes education programs should be integrated into routine clinical care to encourage supportive family involvement in treatment adherence. Future research is recommended to investigate the causal relationships among family support, self-efficacy, and medication adherence using longitudinal or interventional study designs, as well as to explore additional psychosocial and healthcare-related factors that may influence adherence behaviors.

## Ethical Consideration and Competing Interest

Ethical approval from the Ethic Committee STIKES Ganesha Husada Kediri (Approval No. 39/SGH/HRECC/VI/2026). There is no conflict of interest regarding the research or the publication of the research findings.

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