JURKES

ISSN : 2089-3906

JURNAL KESEHATAN

JURNAL ILMU-ILMU KEPERAWATAN, KEBIDANAN, FARMASI & ANALIS KESEHATAN

DOI : https://doi.org/10.52221/jurkes

Relationship Between Knowledge and Medication Adherence in Diabetes Mellitus Patients at RSUD Ciamis

Siti Rahmah Kurnia Ramdan[1], Selviana Putri Dewi[1], Elis Roslianti[1], Yanti Srinayanti[1], Rosmiati[1]

[1]STIKes Muhammadiyah Ciamis, Ciamis, Indonesia

Article Information

Revised: February 2026

Available online: June 2026

Keywords

Diabetes Mellitus, Patient Knowledge, Medication Adherence, Antidiabetic Drugs

Correspondence

E-mail : Yazdanmulki1.cms@gmail.com

ABSTRACT

Diabetes mellitus is a complex chronic disease requiring continuous medical care with multifactorial risk-reduction strategies beyond glycemic control. Diabetes self-management education and support are essential to prevent acute complications, and diabetes remains a major global health concern. This study aimed to determine the relationship between patient knowledge and adherence to antidiabetic medication among diabetes mellitus patients at Ciamis Regional General Hospital. This study used a quantitative descriptive design to assess the relationship between patient knowledge and medication adherence. The research was conducted in the outpatient department of Ciamis Regional General Hospital. The study population consisted of diabetes mellitus patients receiving treatment during the study period. A total sampling technique was applied, involving 39 respondents. Data were analyzed using statihistic. The statistical analysis using the Chi-square test showed a p-value of 0.008 ($p < 0.05$), indicating a significant relationship between patient knowledge and adherence to antidiabetic medication. There is a significant association between patient knowledge and adherence to antidiabetic medication among diabetes mellitus patients at Ciamis Regional General Hospital.

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both (American Diabetes Association, 2024). It represents a growing global health burden, with significant morbidity and mortality due to its long-term complications, including cardiovascular disease, nephropathy, neuropathy, and retinopathy (Chrvala et al., 2016) (International Diabetes Federation [IDF], 2021). The increasing prevalence of diabetes worldwide has positioned it as one of the leading public health challenges of the 21st century, particularly in low- and middle-income countries, including Indonesia.

Effective diabetes management requires not only pharmacological therapy but also comprehensive and continuous care involving patient education, lifestyle modification, and adherence to prescribed treatment regimens (Asche et al., 2017). Among these factors, medication adherence plays a crucial role in achieving optimal glycemic control and preventing both acute and chronic complications (Polonsky & Henry, 2016). However, adherence to antidiabetic medication remains suboptimal in many settings, often leading to poor clinical outcomes and increased healthcare costs (Shrivastava et al., 2019).

Patient knowledge is a key determinant influencing medication adherence (Bailey et al., 2019). Adequate understanding of the disease, its complications, and the importance of therapy can improve patients' motivation and behavior toward treatment compliance (Powers et al., 2020), (García-Pérez et al., 2017). Conversely, limited knowledge about diabetes has been associated with poor adherence and inadequate self-management practices. Therefore, enhancing patient knowledge through structured education is considered an essential component of diabetes care (World Health Organization, 2023).

In Indonesia, diabetes prevalence continues to rise, with national health data indicating a significant increase in cases over recent years (Kementerian Kesehatan RI, 2020). Despite efforts to improve diabetes management, challenges such as low health literacy, limited access to education, and poor adherence to medication persist, particularly in regional healthcare settings (Perkeni, 2021). Previous studies in Indonesia have shown that patient knowledge is significantly associated with treatment adherence among individuals with chronic diseases, including diabetes (Sari et al., 2021), (Fatimah, 2018).

Given the importance of knowledge in shaping patient behavior, it is essential to evaluate its relationship with medication adherence in specific clinical settings (Wahyuni & Arisfa, 2020), (Fitria et al, 2022). Ciamis Regional General Hospital serves as a referral center with a substantial number of diabetes patients, making it a relevant setting for such investigation. Understanding this relationship can provide evidence to support targeted educational interventions aimed at improving adherence and clinical outcomes (Kirkman et al., 2018).

Therefore, this study aims to determine the relationship between patient knowledge and adherence to antidiabetic medication among diabetes mellitus patients at Ciamis Regional General Hospital.

METHOD

Research participants

The sample is a group that represents the population and serves as respondents in a study (Notoatmodjo, 2018). The sample in this study was drawn from the population of diabetes mellitus patients at Ciamis Regional General Hospital who met the specified criteria. A total sampling technique was applied, in which all members of the population were included as respondents. The total number of samples in this study was 39 patients with diabetes mellitus who received treatment during the study period.

Total sampling is a sampling technique in which the number of samples is equal to the total population (Saputri, & Lestari 2020). This approach was used because the population size was less than 100, allowing all eligible individuals to be included in the study.

The inclusion criteria were: (1) patients diagnosed with diabetes mellitus, (2) patients receiving antidiabetic drug therapy, and (3) patients willing to participate as respondents. The exclusion criteria were: (1) diabetes mellitus patients who were hospitalized at Ciamis Regional General Hospital, and (2) patients who were unwilling to participate in the study.

Research procedure

The research procedure was carried out in three main stages: preparation, implementation, and completion.

1. Preparation Stage

   The researcher first submitted a research permit application to the National Unity and Political Agency of Ciamis. After obtaining approval, a formal request for research permission was submitted to Ciamis Regional General Hospital.

2. Implementation Stage

   The study was conducted over a period of one month. Participants who met the inclusion criteria—patients diagnosed with diabetes mellitus, receiving oral hypoglycemic therapy, and willing to participate—were recruited. The researcher began by providing an informed consent form to ensure participants' willingness to be involved in the study. Subsequently, respondents were asked to complete a demographic form, followed by questionnaires assessing their knowledge of diabetes mellitus and their level of medication adherence. All completed questionnaires were collected for further data processing.

3. Completion Stage:

   In this stage, data processing and analysis were conducted. The researcher calculated the total scores of the completed questionnaires and organized the data systematically. Data were then analyzed using statistical methods to determine the relationship between patient knowledge and adherence to antidiabetic medication.

Instrument

The measurement tool used in this study was the Morisky Medication Adherence Scale-8 (MMAS-8), a validated instrument developed by Donald E. Morisky. This scale is widely used to assess medication adherence and has demonstrated good validity and reliability. The research instrument consisted of a structured questionnaire divided into two main parts: respondent characteristics

(name, age, gender, and education level) and adherence to antidiabetic medication.

Medication adherence was measured using the standardized MMAS-8, which includes eight items reflecting key behaviors: forgetting to take medication (items 1, 4, and 8), not taking medication (items 2 and 5), stopping medication (items 3 and 6), and being disturbed by the medication schedule (item 7). The questionnaire was administered directly to respondents, and their responses were used to evaluate their level of adherence to antidiabetic therapy.

Data analysis

Data processing was conducted through several stages, including editing, scoring, coding, data entry, cleaning, and tabulation. Editing was performed to ensure data completeness and accuracy, while incomplete data were excluded. Scoring involved assigning numerical values to questionnaire responses related to patient knowledge and medication adherence. Coding was applied by categorizing variables, where good knowledge and adherence were coded as "2," and poor knowledge and adherence as "3." The data were then entered into a computer system, followed by data cleaning to verify accuracy and consistency. Finally, the data were organized into frequency distribution tables and cross-tabulations to facilitate interpretation.

RESULTS AND DISCUSSION

The validity test showed that all questionnaire items had correlation coefficients (r-count) greater than the r-table value (0.514), indicating that all items were valid. Furthermore, the reliability test demonstrated Cronbach's alpha values of 0.914 for the knowledge questionnaire and 0.924 for the medication adherence questionnaire, both exceeding the acceptable threshold, confirming that the instruments were reliable and internally consistent.

The characteristics of respondents showed that the majority were aged over 30 years (89.7%), followed by 20–30 years (7.7%) and less than 20 years (2.6%). Based on education level, most respondents had completed senior high school (38.5%), followed by junior high school (28.2%), elementary school (23.1%), and higher education (10.3%). In terms of gender, the majority were female (69.2%), while males accounted for 30.8%. These findings suggest that age, education, and gender may influence knowledge levels and health-related behaviors, including medication adherence.

Regarding patient knowledge, most respondents were categorized good knowledge (84.6%), while 15.4% had moderate knowledge, and none were classified poor knowledge. In terms of medication adherence, 53.8% of respondents demonstrated high adherence, 25.6% moderate adherence, and 20.5% low adherence. These results indicate that most patients had a relatively good understanding of diabetes mellitus and showed a high level of adherence to antidiabetic medication.

The analysis of the relationship between patient knowledge and medication adherence revealed that among respondents with good knowledge, the majority demonstrated high adherence (57.6%), while smaller proportions showed moderate (30.3%) and low adherence (12.1%). In contrast, among respondents with moderate

knowledge, most exhibited low adherence (66.7%), and only a minority showed high adherence (33.3%). Statistical analysis using the Chi-square test yielded a p-value of 0.008 ($p < 0.05$), indicating a significant relationship between patient knowledge and adherence to antidiabetic medication.

The results indicate that higher levels of knowledge contribute to improved medication adherence. This can be explained by the fact that knowledge affects an individual's awareness and understanding of the importance of treatment. Additionally, factors such as age and education level may also influence knowledge, as older individuals tend to have more developed cognitive abilities, and higher educational attainment facilitates better access to health information. Consequently, improved knowledge can lead to increased compliance with prescribed medication regimens and better health outcomes.

Table 1. Frequency Distribution of Respondents by Age

Age Group	Frequency (n)	Percentage (%)
< 20 years	1	2.6
20–30 years	3	7.7
> 30 years	35	89.7
Total	39	100.0

Table 2. Frequency Distribution of Respondents by Education Level

Education Level	Frequency (n)	Percentage (%)
Elementary School	9	23.1
Junior High School	11	28.2
Senior High School	15	38.5
Higher Education	4	10.3

Table 3. Frequency Distribution of Respondents by Gender

Gender	Frequency (n)	Percentage (%)
Male	12	30.8
Female	27	69.2
Total	39	100.0

Table 4. Frequency Distribution of Respondents by Knowledge Level

Category	Frequency (n)	Percentage (%)
Good	33	84.6
Moderate	6	15.4
Poor	0	0.0
Total	39	100.0

Table 5. Frequency Distribution of Antidiabetic Medication Adherence

Adherence Level	Frequency (n)	Percentage (%)
Low	8	20.5
Moderate	10	25.6
High	21	53.8
Total	39	100.0

Table 6. Relationship Between Patient Knowledge and Antidiabetic Medication Adherence

Knowledge Level	Low Adherence n (%)	Moderate Adherence n (%)	High Adherence n (%)	Total n (%)
Good	4 (12.1)	10 (30.3)	19 (57.6)	33 (100.0)
Moderate	4 (66.7)	0 (0.0)	2 (33.3)	6 (100.0)
Total	8 (20.5)	10 (25.6)	21 (53.8)	39 (100.0)

Asymptotic Significance (2-sided): p = 0.008 (p < .05)

Mathematical Formulas

The analysis involved calculating the score for each response and determining the percentage using the formula

$$P = \frac{f}{N} \times 100\% \quad (1)$$

where P represents the percentage, f is the total score obtained, and N is the maximum possible score.

CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates a significant relationship between patient knowledge of diabetes mellitus and adherence to antidiabetic medication among outpatients at Ciamis Regional General Hospital. Patients with higher levels of knowledge tend to show better adherence to their prescribed medication regimens, indicating that knowledge plays a crucial role in shaping patient behavior toward treatment compliance. This finding high lights that improving patient understanding is not only a supportive component but a key determinant in achieving optimal therapeutic outcomes and preventing complications of diabetes mellitus. The study contributes to the development of medical science by reinforcing the importance of integrating patient education as a core element of chronic disease management, particularly in diabetes care within regional healthcare settings.

Based on these findings, it is recommended that healthcare providers strengthen structured and continuous patient education programs focused on diabetes management and medication adherence. Educational interventions should be tailored to patient characteristics such as age and educational background to enhance effectiveness. Additionally, integrating counseling and follow-up strategies into routine clinical services may help improve adherence behavior and overall treatment outcomes among patients with diabetes mellitus.

Suggestion

Future research is recommended to involve a larger sample size and a longer observation period to improve the generalizability of the findings. In addition, further studies could include additional variables such as duration of illness, family support, and access to healthcare services to better understand factors influencing medication adherence. The use of more comprehensive and objective measurement methods, such as clinical outcomes or medication refill data, is also suggested to complement self-reported questionnaires and reduce potential bias.

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