



IMPLEMENTING DIABETES MELLITUS SELF-CARE EDUCATION TO IMPROVE ADHERENCE TO SELF-CARE PRACTICES: CASE STUDY

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ABSTRACT

Diabetes Mellitus (DM) is a chronic metabolic disease that requires long-term management through pharmacological therapy and adherence to self-care. Non-compliance with self-care can lead to uncontrolled blood glucose levels and increase the risk of acute and chronic complications. Health education is one nursing intervention that can improve self-care adherence in DM patients. This study aims to analyse the effectiveness of implementing self-care education leaflets in improving self-care adherence among DM patients. This study used a case study design with a pre-post monitoring approach. Respondents were three DM patients selected purposively. The intervention, in the form of self-care education using leaflets, was administered once, followed by three monitoring sessions on October 24, 26, and 28, 2025. The instrument used was the Summary of Diabetes Self-Care Activities (SDSCA), which assesses four aspects: diet, physical activity, blood sugar monitoring, and foot care. The data analysis was descriptive, comparing SDSCA scores and Random Blood Sugar (RBS) levels before and after the intervention. Pre-test scores were obtained during the first evaluation, before respondents received self-care education through leaflets. Post-test scores were assessed through the second and third evaluations after the intervention. Changes in adherence were identified by increases in SDSCA scores for each respondent, while decreases in RBS levels evaluated glycemic control during the monitoring period. The results were presented in tables and narratively interpreted to describe changes in self-care behaviour and blood glucose levels after the educational intervention. Self-care adherence scores increased among all respondents following education. SDSCA scores increased from poor to adequate, then to good. This increase in adherence was accompanied by a gradual decrease in GDS levels at each evaluation. Self-care education using leaflets, accompanied by SDSCA monitoring, was effective in increasing self-care adherence and improving glycemic control in patients with diabetes mellitus.

Keywords: diabetes mellitus; health education; satisfaction; self-care

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INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disease characterised by hyperglycemia due to impaired insulin secretion, insulin action, or both. This disease is progressive and requires lifelong management through pharmacological therapy and consistent lifestyle changes. Suboptimal control can lead to various serious complications such as heart disease, nephropathy, neuropathy, and peripheral vascular disorders. The success of DM therapy depends heavily on patient adherence to daily self-care. However, in practice, many patients still do not adhere to recommendations for diet, physical activity, blood sugar monitoring, and foot care. This condition leads to uncontrolled blood glucose levels and increases the risk of long-term complications (Putri, B. C., & Purwanti, 2024).

Globally, DM is a priority public health issue due to its increasing prevalence. Data from the International Diabetes Federation (IDF) in 2022 reported that more than 500 million people worldwide live with diabetes, and this number is projected to increase significantly by 2045 if comprehensive prevention and control efforts are not implemented. This increase in cases is not only occurring in developed countries but also in developing ones, including Indonesia. The economic and social burden of DM complications also burdens healthcare systems in various

countries. Therefore, control strategies that emphasise complication prevention through increased patient compliance are crucial. Education-based promotive and preventive efforts are integral to modern DM management.

In Indonesia, the prevalence of diabetes mellitus (DM) has shown a consistent upward trend over the past decade. The 2023 Indonesian Health Survey (SKI) reported that the prevalence of diabetes among people aged 15 years and older increased compared to the previous survey. This increase is closely related to changes in people's lifestyles, such as consumption of high-sugar, high-fat foods, lack of physical activity, and low awareness of routine health check-ups. At the primary healthcare level, DM is one of the most common chronic diseases requiring regular check-ups. Based on preliminary data at the study sites, DM patients still have uncontrolled random blood sugar levels and suboptimal self-care practices. This situation indicates the need for more targeted interventions to improve patient compliance with disease management.

Diabetes management focuses not only on drug therapy but also on the patient's ability to perform independent, sustainable self-care. Self-care for patients with diabetes includes dietary adjustments, regular physical activity, blood sugar monitoring, medication adherence, and foot care to prevent diabetic ulcers. One chronic complication that often occurs due to suboptimal self-care is diabetic ulcers, which can increase the risk of amputation and reduce the patient's quality of life. Therefore, improving patient knowledge and skills in self-care is a crucial component of diabetes management strategies. Structured and systematic health education has been shown to improve patient understanding of the disease and its management (Purwanti, 2020). Educational media such as leaflets are considered effective because the information provided is concise, easy to understand, and can be reread by patients at home.

To assess the success of educational interventions, standardised and valid measurement instruments are needed. One widely used instrument is the Summary of Diabetes Self-Care Activities (SDSCA), which measures patient compliance in aspects of diet, physical activity, blood sugar monitoring, and foot care. The use of the SDSCA enables quantitative, objective evaluation of self-care behaviour. Several previous studies have shown that print-based education, such as leaflets, is effective in improving knowledge and self-care behaviour among patients with diabetes. Research by (Putri et al., 2022) reported a significant increase in knowledge scores after providing diabetes education. Similarly, Jayanti and Dewi (2025) found that structured educational interventions improved dietary adherence and physical activity among patients with diabetes. These findings reinforce the importance of education in improving self-management behaviour.

Although various studies have demonstrated the effectiveness of education in improving self-care knowledge and behaviour, there are still limitations in implementing ongoing monitoring at the primary care level. Most studies focus on measuring knowledge without directly linking it to changes in blood glucose levels. Furthermore, few studies have combined leaflet-based education with intensive monitoring using the SDSCA instrument in a case study design within clinical practice. Therefore, this study is crucial for directly evaluating the effectiveness of leaflet-based self-care education, coupled with structured monitoring, in increasing adherence and improving glycemic control among patients with diabetes. The results of this study are expected to serve as the basis for developing more applicable and sustainable nursing interventions to improve the quality of life of patients with Diabetes Mellitus.

METHOD

This study used a case study design with a pre-post monitoring approach to evaluate changes in self-care adherence among patients with Diabetes Mellitus (DM) after receiving a self-care education intervention delivered via leaflets. The pre-post approach measured adherence levels before the intervention (pre-test), then provided self-care education using leaflets, and then

conducted a re-evaluation (post-test) through repeated monitoring to identify changes in self-care behaviour. This design was chosen because it allowed researchers to conduct in-depth observations of each patient's response individually. Furthermore, this approach provided a comprehensive overview of the dynamics of changes in self-care behaviour within a relatively short observation period.

Three DM patients participated in this study and agreed to participate in ongoing monitoring. Respondents were selected using purposive sampling based on inclusion criteria: patients diagnosed with Diabetes Mellitus, able to communicate well, and willing to complete the entire education and evaluation series. Evaluations were conducted three times within a predetermined timeframe: October 24, 26, and 28, 2025. Direct monitoring was conducted to ensure consistency in completing the instruments and maintain the accuracy of the data obtained. During the research process, each respondent received the same education regarding DM self-care management.

The instrument used in this study was the Summary of Diabetes Self-Care Activities (SDSCA), a standardised questionnaire measuring patient compliance with diabetes self-care activities. The SDSCA instrument consists of 10 questions covering four main domains: diet (4 items), physical activity (2 items), blood sugar monitoring (2 items), and foot care (2 items). Each item is scored based on the number of days (range: 0–7) over the last 7 days during which the patient performed the recommended self-care activities. A higher score indicates a better level of self-care compliance. The measurement data were analysed using a case study design with a pre-post monitoring approach, comparing pre-test and post-test scores to assess whether self-care compliance increased after the provision of education via the leaflet.

RESULT

Respondent Characteristics

This study involved three respondents diagnosed with Diabetes Mellitus (DM) who were monitored across three evaluations. Respondent characteristics are presented in Table 1.

Table 1.

Respondent Characteristics

Respondent	Gender	Age (Years)	Long-term DM Suffering	Last education
Ny. W	Woman	56	6 year	Senior High School
Tn. S	Man	60	8 year	Junior High School
Tn. A	Man	52	5 year	Senior High School

Based on the table above, the majority of respondents were male (2 respondents) with an age range of 52–60 years. The duration of diabetes mellitus ranged from 5 to 8 years. All respondents were in the late-adult age group, which is at risk of complications if disease management is suboptimal.

Compliance and Blood Sugar Monitoring Results

The results of the Random Blood Sugar (GDS) monitoring and Summary of Diabetes Self-Care Activities (SDSCA) scores during the three evaluations are presented in Table 2.

Table 2.

GDS Monitoring Results and SDSCA Scores

Respondent	Date	GDS (mg/dL)	score <i>SDSCA</i>	category
Ny. W	24 October 2025	268	2	not enough
	26 October 2025	220		Enough
	28 October 2025	185	5	Good
Tn. S	24 October 2025	254	2	not enough
	26 October 2025	210	4	Enough
	28 October 2025	178	6	Good
Tn. A	24 October 2025	241	2	not enough
	26 October 2025	205	5	Good
	28 October 2025	170	6	Good

Analysis of Results

According to Table 2, all respondents showed an increase in self-care adherence scores after receiving education via leaflets, accompanied by SDSCA instrument monitoring. At the first evaluation, all respondents were in the poor-adherence category, with a score of 2. After the intervention, there was a gradual increase in the second and third evaluations, reaching the adequate and good categories. This increase in adherence scores was consistent with a decrease in blood glucose levels in each respondent. Mrs W experienced a decrease in blood glucose levels from 268 mg/dL to 185 mg/dL. Mr S experienced a decrease from 254 mg/dL to 178 mg/dL. Meanwhile, Mr A showed a decrease from 241 mg/dL to 170 mg/dL. The decrease in blood sugar levels was consistent across each monitoring session. Overall, the results of this study indicate that self-care education using leaflets, accompanied by structured monitoring, improved self-care adherence among all respondents. This increased adherence contributed to improved glycemic control, as evidenced by a gradual decrease in blood glucose levels throughout the observation period.

DISCUSSION

The study found that providing education through leaflets, accompanied by structured monitoring, increased self-care compliance among all respondents. At the initial evaluation, the three respondents were in the poor-compliance category, with low SDSCA scores and high Random Blood Sugar (RBS) levels. After the intervention, compliance scores gradually increased, reaching the sufficient and good categories at the final evaluation. This improvement reflects behavioural changes in diet management, physical activity, blood sugar monitoring, and foot care. These behavioural changes indicate that the education provided improved understanding and encouraged more consistent self-management practices. Thus, in line with research, educational interventions play a crucial role in improving adherence among DM patients to self-care.

The findings of this study align with the theory that self-care management is a key component in long-term diabetes management. The 2024 Diabetes Care Standards confirm that diabetes self-management education and support (DSMES) is effective in improving metabolic control and quality of life (American Diabetes Association, 2024). Structured education helps patients understand the relationship between daily behaviours and blood glucose levels. In this study, improvements in SDSCA scores were followed by consistent decreases in GDS levels across monitoring sessions. This reinforces the concept that behavioural changes have a direct impact on improving glycemic control. Therefore, the results of this study align with evidence-based practice recommendations in the management of diabetes.

The use of leaflets as an educational medium in this study proved effective in increasing respondent compliance. Leaflets allow for concise, systematic delivery of information and can be independently reread by patients at home. This medium helps patients recall previously explained material on diet, physical activity, and foot care. Research by (Anggraeni et al., 2024) showed that leaflet-based education significantly improved patients' knowledge of type 2 diabetes compared with pre-intervention levels. Similar results were also reported by (Jayanti and Dewi 2025), who found an increase in self-management behaviour following education delivered via printed media. Therefore, the effectiveness of leaflets in this study is supported by previous empirical findings. Monitoring using the Summary of Diabetes Self-Care Activities (SDSCA) instrument provides a quantitative overview of patient compliance levels based on the number of days self-care activities were carried out in the past seven days. This approach serves not only as a measuring tool but also as a means of reflection for patients to evaluate their daily habits. In this study, an increase in SDSCA scores was associated with a decrease in GDS levels among all respondents. (Fadhila and Kartinah, 2025) reported that measurable self-management is significantly associated with blood sugar control in patients with type 2 diabetes. These findings support the results of this study, which show that increased self-care compliance contributes to glycemic stabilisation. Thus, the combination of education and structured monitoring has a measurable clinical impact.

One important aspect that improved in this study was foot care to prevent long-term complications. Routine foot care can prevent the development of diabetic ulcers, which can lead to amputation. (Armstrong et al., 2023) stated that most cases of diabetic ulcers stem from a lack of early detection and inadequate foot care. Furthermore, (Boulton et al., 2020) emphasised the importance of foot injury prevention education as part of a comprehensive evaluation of patients with diabetes. Improved compliance in this aspect indicates that the education provided was understood and implemented by respondents. Therefore, this intervention has the potential to reduce the risk of chronic complications in patients with diabetes. Overall, this study demonstrates that self-care education using leaflets accompanied by SDSCA monitoring is effective in increasing self-care adherence and improving glycemic control in patients with diabetes mellitus. The results are consistent with previous studies that emphasise the importance of ongoing education in diabetes management. This intervention not only improves cognitive knowledge but also encourages behavioural changes with clinical implications. Although this study used a case study design with a limited number of respondents, the results provide a clear picture of the benefits of a structured educational approach. Therefore, this strategy can be considered for wider implementation in clinical and community nursing practice.

CONCLUSION

Based on the results of a pre-post monitoring case study on three patients with Diabetes Mellitus, it can be concluded that implementing self-care education using leaflets, accompanied by monitoring using the Summary of Diabetes Self-Care Activities (SDSCA) instrument, is effective in improving self-care compliance. The increase in compliance scores among all respondents was consistent across diet, physical activity, blood sugar monitoring, and foot care. It was followed by a decrease in Random Blood Sugar (GDS) levels during the evaluation period. These findings indicate that structured educational interventions, accompanied by regular monitoring, not only improve self-care behaviour but also improve clinical glycemic control.

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