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Association Between Family Support and Wound Care Adherence Among Patients with Type 2 Diabetes Mellitus at the Diabetic Foot Clinic of Ulin Hospital Banjarmasin

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Abstract
Introduction: *Diabetes mellitus can cause diabetic foot sores that require ongoing care, so patient adherence is an important factor in preventing complications.* ***Objective:*** *This study aims to analyze the relationship between family support and wound care compliance in Diabetes Mellitus patients at Diabetic Foot Polyclinic Ulin Hospital Banjarmasin.* ***Method:*** *The study used a cross-sectional quantitative design on 55 respondents selected by accidental sampling. Family support was measured using the Hensarling Diabetes Family Support Scale, while adherence was assessed through an observation sheet; The data were analyzed univariate and bivariate using Spearman Rank.* ***Result and Discussion:*** *The results showed that 51 respondents (92.7%) received good family support and 52 respondents (94.5%) had good wound care adherence. The analysis showed a significant positive association between family support and wound care adherence (r=0.560; p<0.001). These findings suggest that emotional, instrumental, informational, and family assessment support is related to the consistency of patients undergoing treatment.* ***Conclusion:*** *It was concluded that family support plays an important role in supporting patient wound care adherence and strengthening the family-centered care approach in diabetes nursing services*

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Introduction

Non-Communicable Diseases (NCDs) are a chronic condition that is one of the leading causes of death globally, especially in low- and middle-income countries, with diabetes mellitus as one of the major health challenges of the 21st century because the number of sufferers continues to increase accompanied by various complications that reduce quality of life (Zulsefriandi et al., 2023). Diabetes Mellitus is a health condition caused by impaired insulin production or use and is characterized by increased blood glucose levels that can be influenced by genetic, environmental, and lifestyle factors, including unhealthy diet and lack of physical activity (Rosyidah & Cahyono, 2025); (Saputri et al., 2025). Among the clinical types of diabetes, type 2 diabetes mellitus (T2DM) accounts for the majority of cases worldwide and is the type most closely associated with these modifiable lifestyle factors, making it the specific focus of the present study (Anwar et al., 2025); (Oktavia et al., 2022)

World Health Organization (WHO 2024), estimates that 537 million adults are living with diabetes, with projections increasing to 643 million by 2030 and 783 million by 2045, while (International Diabetes Federation (IDF), 2024) reports around 589 million people aged 20–79 years in 2024 which is expected to reach 853 million by 2050. Indonesia ranks 5th in the world with the highest number of diabetics, which is around 20.4 million adults in 2024 and is projected to reach 28.6 million in 2050, while in South Kalimantan Province the number of sufferers is estimated at around 61,122 people based on a prevalence of 1.4% of the total population of around 4.3 million people (Indonesian Health Survey (SKI), 2023). Based on (Health Profile, 2023), an average of 103.2% of DM sufferers have received health services according to standards, while in Banjarmasin City the figure reaches 91.8%.

Poorly managed diabetes mellitus can lead to complications of neuropathy and peripheral vascular disease that increase the risk of diabetic foot injuries. These wounds are serious complications because they can develop into infection, tissue damage, amputation, and even death if not treated properly (Lailasari et al., 2022). Therefore, wound care in DM patients requires regular and continuous management to prevent complications and support the healing process (Prawinda et al., 2024). The success of treatment depends not only on the medical measures provided in the healthcare facility, but also on the patient's adherence in carrying out wound care consistently at home.

Patient adherence is influenced by various factors, one of which is family support in the form of assessment, informational, instrumental, and emotional support, such as helping to change dressings, clean wounds, accompanying patients to wound care check-ups, and provide motivation during treatment (Ramadhanti et al., 2025); (Parinduri et al., 2023). Good family support can improve patient adherence, potentially accelerating healing and lowering the risk of further complications (Maulinda, 2024). In addition, adherence is also influenced by patient knowledge and motivation, so the involvement of patients and families in education and treatment processes is important to support effective management of conditions and improve quality of life (Rahmadanti & Diani, 2020); (Prasetya et al., 2023)

A preliminary study conducted on October 09–11, 2025 at the Diabetic Foot Polyclinic of Ulin Hospital Banjarmasin on 10 T2DM patients showed that family support had a real role in supporting patient adherence: four patients stated that the family always gave suggestions for check-ups and accompanied them to the polyclinic and helped them understand information about diabetes, two patients received support in the

implementation of exercise and sugar-controlled diets as well as the provision of recommended food, one patient received assistance with medical expenses and motivation, while the other three patients stated that family support increased confidence and motivation in undergoing wound care.

Previous research has also confirmed this relationship stated that family support has a meaning for more optimal wound care adherence and patients tend to be more obedient in carrying out routine and correct care, while research at the Asri Wound Care Center Medan Clinic by (Safitri Parinduri et al., 2023) through the Spearman Rank (Rho) test obtained a p-value of < 0.000 (<0.05) with a correlation coefficient of 0.467 which shows a relationship of family support in the healing process of diabetic ulcer wounds with patient adherence in undergoing treatment. However, research on this relationship in T2DM patients, especially at the Diabetic Foot Polyclinic of Ulin Banjarmasin Hospital, is still limited, so research is needed to obtain an empirical picture that is in accordance with the characteristics of patients and services at the location.

Based on this description, the problem of this study is whether there is a relationship between family support and wound care adherence in T2DM patients at the Diabetic Foot Polyclinic of Ulin Hospital Banjarmasin. This study aims to identify the level of family support received by T2DM patients, measure their level of adherence to wound care, and analyze the relationship between the two variables

Method

This study used a quantitative approach with a cross-sectional design to analyze the relationship between family support as an independent variable and wound care adherence as a dependent variable in patients with type 2 Diabetes Mellitus. The research was carried out on July 01-18, 2026 at the Diabetic Foot Polyclinic of Ulin Hospital, Banjarmasin. The study population was outpatient type 2 Diabetes Mellitus patients encountered during the study period, with a population of 60 patients and a sample of 55 respondents who met the study criteria. Samples were selected using accidental sampling techniques, which are nonprobability sampling based on patients who were met by chance, met the criteria, and were willing to become respondents (Adiputra et al., 2021). The respondents included were patients aged >18 years, diagnosed with type 2 Diabetes Mellitus, and undergoing wound treatment. Patients with serious or unstable clinical conditions, severe cognitive or communication impairments, and unwillingness to be respondents were excluded from the study. Populations and samples were used to represent subjects with characteristics that were in accordance with the research objectives (Imansari & Kholifah, 2023). Systematically, the implementation of research starts from problem identification, preliminary studies and goal setting, problem formulation, preparation and revision of proposals, ethical management, data collection, data processing and analysis, interpretation of results, to drawing conclusions and preparing reports, as shown in Figure 1 (Akbar & Hanif, 2025).

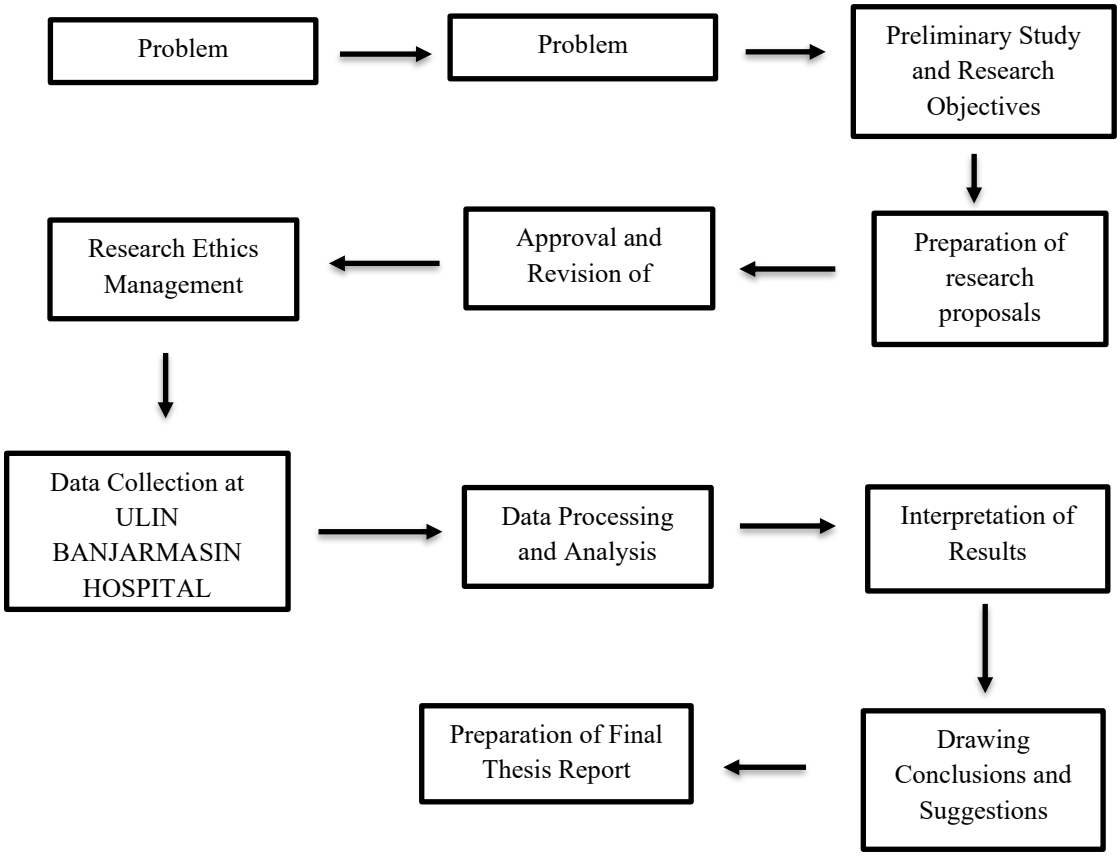

Figure 1. Research implementation flow chart

Data collection was carried out using two main instruments. Family support was measured using the Hensarling Diabetes Family Support Scale (HDFSS) which consisted of 29 questions, including emotional, instrumental, assessment, and informational support. The instrument consisted of 25 favorable questions and 4 unfavorable questions with four answer choices. The total score is categorized into support at a score of 88–116, sufficient at a score of 59–87, and less at a score of 29–58. HDFSS is an instrument adopted from previous research and has been tested for validity and reliability, with a correlation value of 0.632 and Cronbach's alpha value of 0.994 (Tiara Ramadhanti et al., 2025). Wound care compliance was measured using an observation sheet consisting of 10 items that included frequency of visits, risk control, and adherence to wound care protocols. Each answer "Yes" is scored 1 and "No" is given a score of 0; Scores of 5–10 are categorized as good compliance and scores 0–4 as poor compliance. A summary of the measurement of the research variables is shown in Table 1.

Table 1
Definition and Measurement of Research Variables

Variable	Parameters	Instruments	Scale	Result categories
Family support	Emotional, instrumental, informational, and assessment support	Hensarling Diabetes Family Support Scale (HDFSS), 29 items	Ordinal	Good: 88–116; Enough: 59–87; Less: 29–58
Wound care compliance	Frequency of visits, risk control, and compliance with wound care protocols	Wound care compliance observation sheet, 10 items	Ordinal	Good: 5–10; Less: 0–4

The data collection process is carried out after obtaining research permits and ethical feasibility. Patients who meet the criteria are given an explanation of the purpose and procedure of the study, then are asked to give consent through informed consent. Once respondents were willing to participate, family support measures were carried out using the HDFSS questionnaire and wound care adherence was assessed using an observation sheet. The completeness of the data is checked before editing, coding, entry, cleaning, and tabulating using SPSS software. Data analysis was carried out univariate and bivariate. Univariate analysis was used to describe respondent characteristics as well as the distribution of family support and wound care adherence in the form of frequency and percentage (Eddy Sarwono et al., 2021). Since both major variables are ordinal-scale, the relationship between family support and wound care adherence was analyzed using a Spearman Rank (Rho) test with a significance level of $\alpha=0.05$; A $p\leq0.05$ value indicates a significant relationship. The research has obtained ethical feasibility from the Ethics Commission of the University of Muhammadiyah Banjarmasin with the number KEPK: 0128226371 and permission from the Director of Ulin Hospital Banjarmasin. The implementation of the research applies the principles of respect for persons, informed consent, anonymity, beneficence, non-maleficence, confidentiality, and justice to maintain the rights, security, and confidentiality of respondents

Results and Discussion

1. Results

Characteristics of respondents

The study involved 55 patients with type 2 Diabetes Mellitus (DM) who underwent outpatient and wound treatment at the Diabetic Foot Polyclinic of Ulin Hospital Banjarmasin. The age of the respondents was in the range of 37-79 years. The age group of ≤55 years was the largest group, namely 24 people (43.5%), followed by the ≤65 age group as many as 21 people (38.2%) and the ≥66 years group as many as 10 people (18.2%). The gender distribution was almost evenly distributed, namely 28 females (50.9%) and 27 males (49.1%). These characteristics show that the patients undergoing diabetic wound treatment in this study came from the adult to elderly group, with a relatively even gender representation

Table 2
Characteristics of Respondents by Age and Gender

Characteristics	Categories	Frequency (n)	Percentage (%)
Age	≤55 years old	24	43.5
	≤65 years old	21	38.2
	≥66 years old	10	18.2
Gender	Male	27	49.1
	Women	28	50.9

Source: Research primary data, 2026.

Distribution of family support and wound care adherence

Univariate analysis shows the dominance of the good category in both main variables. Family support in the good category was found in 51 respondents (92.7%), the sufficient category in 3 respondents (5.5%), and the poor category in 1 respondent (1.8%). In the wound care compliance variable, 52 respondents (94.5%) were in the good category and 3 respondents (5.5%) were in the poor category. This pattern shows that most patients are in a supportive family environment while being able to maintain wound care behaviors as recommended during treatment.

Table 2
Family Support Distribution and Wound Care Compliance

Variable	Categories	Frequency (n)	Percentage (%)
Family support	Good	51	92.7
	Enough	3	5.5
	Less	1	1.8
Wound care compliance	Good	52	94.5
	Less	3	5.5

Source: Research primary data, 2026.

The relationship of family support to wound care adherence

Cross-tabulation showed a consistent pattern: in the group with good family support, 50 of 51 respondents showed good wound care adherence; in adequate family support, 2 out of 3 respondents were in the good adherence category; while the only respondent with poor family support was in the poor adherence category. The Spearman's Rho test yielded a correlation coefficient of r=0.560 with p<0.001. This value indicates a positive relationship with moderate to strong strength, so the better the family support, the higher the patient's tendency to comply in undergoing wound treatment.

Table 3
The Relationship of Family Support to Wound Care Adherence

Family Support	Baikn	Good %	Less	Less%	Total	Total%	p-value
Good	50	90.9	1	1.8	51	92.7	<0.001
Moderate	2	3.6	1	1.8	3	5.5	
Poor	0	0	1	1.8	1	1.8	
Total	**52**	**94.5**	**3**	**5.5**	**55**	**100**	

Source: Research primary data, 2026. Spearman's Rho test: r=0.560; p<0.001.

2. Discussion

Family support for type 2 DM patients

The finding that 92.7% of respondents received good category family support showed that family had been the main source of support during the patient's wound treatment. In the context of chronic illness, family support does not only mean physical presence, but also includes emotional, instrumental, informational, and judgmental involvement. Nurmila et al. (2025) stated that family support is important to reduce stress, help patients adapt to social changes, and maintain the spirit of long-term DM treatment. These findings are also in line with Utami et al. (2024) who explain that family involvement through daily help, empathy, and compassion can strengthen patients' psychological states and reduce loneliness due to the burden of chronic diseases.

Scientifically, the high level of family support can be explained through the function of the family as a companion system that reduces the psychological and practical burden of the patient. Patients with diabetic lesions should undergo repeated treatments, maintain an diet, attend controls, and maintain wound hygiene in the long term. This condition has the potential to cause therapeutic saturation if the patient has to manage it themselves. Anggraini et al. (2024) emphasized that informational support and assessment in the form of reminders of control schedules, monitoring of nutritional intake, and education about complications can help prevent treatment fatigue. Marnianti et al. (2025) also stated that positive affirmations, financial assistance, and the provision of supportive facilities help patients stay in the therapy routine. Thus, the dominance of the good family support category in this study not only describes positive social relationships, but also indicates the existence of real resources that patients can use to maintain care behaviors. The family acts as a reminder, a provider of assistance, a source of information, as well as a provider of emotional reinforcement. The four forms of support complement each other and are relevant to the needs of type 2 DM patients who undergo continuous wound care.

Compliance with wound care in type 2 DM patients

As many as 94.5% of respondents were in the category of compliance with good wound care. This high proportion suggests that most patients are able to maintain treatment behaviors as recommended, including attending check-ups, maintaining wound hygiene, changing dressings, and monitoring the condition of the feet. Aini et al. (2024) explain that adherence to wound hygiene protocols, wound washing with sterile fluids, and being aware of red flags are important interventions in preventing the worsening of infection and the formation of necrotic tissue.

Soelistijo et al. (2021) also emphasized that regular replacement of modern dressing combined with glycemic control supports the healing process from the inflammatory phase to the proliferation and epithelialization phase. Therefore, the high adherence to this study has clinical significance because consistent care behaviors can help keep the condition of the wound from deteriorating. Compliance also reflects the patient's ability to translate healthcare worker education into routine actions at home. Despite the small number, 3 respondents (5.5%) were still in the category of low compliance. This group is important to note because non-adherence to daily controls and care can increase the risk of wound worsening. Hasnawati et al. (2025) explain that non-compliance with the control schedule can contribute to the failure of ulcer treatment to increase the need for invasive measures. Cahyono et al. (2021) also emphasized the importance of foot care

hygiene, finger joint inspection, and the use of appropriate footwear for education. Thus, high adherence in the majority of patients still needs to be followed by an early identification strategy for patients who begin to show treatment barriers.

The relationship of family support to wound care adherence

The results of the Spearman's Rho test showing $r=0.560$ and $p<0.001$ proved that there was a meaningful positive relationship between family support and wound care adherence. The pattern in Table 3 reinforces these results, as almost all patients with good family support also show good adherence. These findings suggest that family support can serve as an external reinforcer that helps patients maintain a treatment routine, especially when treatment must be carried out in conjunction with daily activities. In patients with high mobility or job responsibilities, wound control and treatment schedules can compete with the demands of daily life. In these conditions, families can help remind schedules, arrange transportation, provide costs, assist with administration, and accompany patients to health facilities. Priscayanti et al. (2025) stated that family assistance is related to patient discipline, while Safitri Parinduri et al. (2023) show that diabetic ulcer patients who receive comprehensive family support tend to be more obedient and more consistent in coming to health facilities.

However, the relationships found do not mean that family support automatically determines compliance. Table 3 shows one respondent who had obtained good family support but still had less compliance. This phenomenon confirms that patient behavior is also influenced by internal factors. Prawinda et al. (2024) explained that the management of DM is influenced by patient perception, self-efficacy, therapeutic saturation, anxiety, and a sense of hopelessness when the healing process is slow. Thus, family support is an important factor, but compliance remains the result of an interaction between external support and the patient's individual psychological state. Of the forms of family support discussed in the text, instrumental and emotional support appear to be most relevant in reducing patient barriers. Instrumental support helps to address transportation issues, costs, schedule reminders, and treatment needs, while emotional support maintains a sense of security and motivation during the long healing process. Ariyanti and Hidayah (2024) and Wijaya et al. (2025) place the combination of these two forms of support as the dominant component in improving compliance. This explains why the family-centered care approach is relevant for diabetic patients.

Scientific and service implications

Overall, this study answered the research objectives by showing that family support was significantly related to wound care adherence in type 2 DM patients. The findings reinforce the view that wound care adherence is not only a matter of individual knowledge or willingness, but is also influenced by the social support system around the patient. In nursing practice, families can be positioned as partners in wound care education, monitoring control schedules, and strengthening patient motivation. For the Diabetic Poly Foot at Ulin Hospital Banjarmasin, this result supports the development of education that involves patients and accompanying family members together. The interpretation of the results still needs to take into account the limitations of the study. Cross-sectional design only describes conditions at one time and therefore cannot ensure cause-and-effect relationships or changes in compliance over time. In addition, there were five patients who refused to be interviewed during the data collection period, which had the potential

to cause selection bias. Nonetheless, the correlation found provides an empirical basis for considering family support as one of the important components in strategies to improve wound care adherence in type 2 DM patients.

Conclusion

Most of the patients with Diabetes Mellitus at the Diabetic Poly Foot at Ulin Banjarmasin Hospital received good family support in the wound care process, namely 51 respondents (92.7%), and most of the patients also had a good level of wound care compliance, namely 52 respondents (94.5%). The results of the analysis showed a significant relationship between family support and wound care adherence in patients with Diabetes Mellitus with a value of p=0.000. These findings confirm that family support is one of the important factors related to patient compliance in undergoing wound care. Thus, this study provides a scientific contribution that family involvement needs to be seen as a relevant part in supporting the sustainability of wound care in Diabetes Mellitus patients

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