

# Family support among patients with diabetic foot ulcer

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## Family support among patients with diabetic foot ulcer

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### Abstract

**Background:** Non-Communicable Diseases (NCDs) are a common cause of death in Indonesia, with Diabetes Mellitus (DM) being one of them. Diabetes Mellitus is a disease that occurs when the pancreas cannot produce insulin, or it is a chronic condition where the body cannot effectively use insulin, leading to increased blood glucose concentration or hyperglycemia, which is a characteristic of diabetes mellitus. The prevalence of diabetes mellitus has been increasing year by year, causing serious health issues in both developed and developing countries.

**Purpose:** To identify the relationship between family support and injury incidents in patients with DM in the working area of the Cibiru Community Health Center, Bandung City in 2023.

**Method:** This study is correlational in nature, utilizing a quantitative method conducted analytically and observationally, with cross-sectoral data collection. Chi-square analysis using Bivariate Test was employed, with a total of 40 respondents.

**Results:** The mean age of the respondents was 59.5 with a standard deviation of 8.108 in the range of 45-75 years. The age group of 46-60 years constituted 55.5%, while the age group of 60-75 years was 45.0%. About 82.5% had high family support, 12.5% had moderate family support, and 5% had low family support. The bivariate analysis yielded a p-value of 0.027 when correlated with the occurrence of injuries. Thus, there is a relationship between family support and injury incidents in diabetic patients.

**Conclusion:** Family support significantly influences the management or care of DM patients to minimize the occurrence of injuries.

**Keywords:** Diabetes Mellitus Patient; Family Support; Incidence of Injuries

### INTRODUCTION

The prevalence of diabetes mellitus (DM) is increasing every year. In 2017, it reached 424.9 million people and is estimated to reach 628.6 million people by 2045. Indonesia ranks as the sixth country with the highest number of DM patients in the world, totaling 10.3 million people. The prevalence of DM continues to rise, reaching a total of 16.7 million people by 2045 (International Diabetes Federation, 2017; Permadani, & Maliya, 2017). This includes the province of Central Java, where DM patients reached 152,075 people in 2019. The prevalence will continue to increase due to various factors such as

lifestyle, increasing obesity rates, and low health awareness. DM patients are encouraged to prevent and treat the disease as it can improve the life expectancy of patients and reduce the risk of complications (Suciana, Daryani, Marwanti, & Ariyanto, 2019).

Family support plays a significant role in the psychological well-being of DM patients because health is influenced by the social system. Strong family support implies that patients are expected to be more organized in implementing and controlling DM (Retnowati, & Satyabakti, 2015). Family support

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is not just about providing assistance but, more importantly, about how DM patients can accept and assess the meaning of that assistance. This perception is closely related to the accuracy of the support given, meaning that someone who receives it truly feels the benefit of that assistance. This occurs because it is tangibly perceived and provides satisfaction (Yusra, & Waluyo, 2022). Comprehensive management for DM patients is expected to address and prevent complications of DM foot ulcer and achieve quality health (Haas, Maryniuk, Beck, Cox, Duker, Edwards, & Youssef, 2012).

Family is a group of two or more people bound by blood, marriage, or adoption living in one house. Even if they live separately, they still care for each other. Family plays a crucial role for patients, and good behavior and management of DM require participation from the family to provide support (Musdiaman, Yusuf, Afelya, & Hidayah, 2020). Family support is the attitude, actions, and acceptance of the family towards the sick person. Support is provided in the form of information support, assessment/support of appreciation, instrumental support, and emotional support (Nuraisyah, Kusnanto, & Rahayujati, 2017).

Patients with DM have an increased risk of health problems due to acute and chronic complications. Consistently high blood glucose levels can lead to vascular complications, diabetic retinopathy, diabetic nephropathy, diabetic neuropathy, and diabetic ulcers (Wardani, Sugiarto, & Cilmiaty, 2018). Diabetes Mellitus Ulcer (DM), also known as diabetic ulcers, is a form of chronic DM complication characterized by open ulcer on the skin's surface that may be accompanied by local tissue death or neuropathic foot ulcer (Aman, Rasyid, Bakri, & Patellongi, 2018). The most common occurrence of DM ulcer is on the feet, with a prevalence of diabetic foot ulcers reaching 15%, and it is the leading cause of hospitalization up to 80% every year. This is due to high blood sugar levels and blocked blood vessels in the feet, causing patients not to feel the presence of foot ulcer (Choirunnisa, 2019).

Basically, the treatment for wound healing in DM patients is the same, but the results achieved depend on each individual. The wound healing process for DM patients involves managing and reducing causative factors, providing support

systems by offering adequate nutrition, and maintaining the local physiological environment (Wahyuni, 2016). Factors contributing to the occurrence of DM wound problems include physical activity, consumed food, duration of suffering from DM, environmental infrastructure, socioeconomic conditions, and family support. The healing of chronic DM is the most feared and disturbs patients in terms of the high costs of treatment (Hastuti, Januarista, & Suriawanto, 2019).

DM patients need to control their metabolism, which can affect patients' lifestyles (in using insulin therapy and oral antidiabetic drugs), diet, blood glucose measurements, and exercise (Sudaryanto, Setiyadi, & Frankilawati, 2014). This can be achieved through family participation or involvement. The experience of difficulties for patients, their families, and the complications that arise as patients adapt to all changes can negatively impact their quality of life. However, family support can maintain metabolic control affecting the patient's quality of life, increasing it by 35% after family support is fulfilled.

## RESEARCH METHOD

This research employed a correlational method to determine the relationship between several variables in a quantitative study (Yusuf, 2014; Hidayat, 2015). Additionally, this type of research also sought to find the relationship between internal and external variations based on the descriptive bivariate correlation coefficient. The degree of relationship (how strong the relationship is) is usually expressed in numbers between -1 and +1, known as the correlation coefficient. A correlation of zero (0) indicates no relationship. Correlation coefficients approaching -1 or +1 represent perfect correlations at both extremes. The direction of the relationship indicates that the higher the score on one variable, the higher the score on the other variable, or vice versa. Correlation analysis is a statistical data analysis technique used to find relationships between two or more quantitative variables. In this case, the independent variable is family support, and the dependent variable is the occurrence of ulcer in patients with DM.

The population of this study consisted of 1161 individuals with DM in the working area of Cibiru Community Health Center, Bandung City, during the period 2022 - 2023. Sampling was then conducted to

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select respondents by making statements. There were 40 individuals with DM who met the criteria and subsequently became respondents in this study. Furthermore, for each respondent's family support, they were asked to fill out a questionnaire consisting of 25 statements with 4 checklist options: never valued as 1, rarely valued as 2, often valued as 3, and always valued as 4. Thus, the accumulation of questionnaires obtained a total score range of 25 – 100. The cumulative score of each questionnaire was then categorized with a total score range of 25 – 30 classified as low, 31 – 50 as moderate, and 51 – 100 as high. Meanwhile, for wound occurrence data,

an observational approach was used.

The research design serves as a framework to achieve research objectives and guides the researcher throughout the research process (Sastroasmoro, 2022). The research was conducted in the working area of PKM Cibiru, Bandung City. This study has obtained permission and recommendations from the Research Ethics Commission of Universitas Bhakti Kencana Bandung with ethical certificate number 159/09.KEPK/UBK/IX/2023, dated September 12, 2023.

RESEARCH RESULTS

4 Table 1. Characteristic of Respondents (N=40)

Variables	Results
<b>Age (Mean±SD)(Range)(Year)</b>	(59.5±8.108)(45-75)
<b>Age (n/%)</b>	
46 – 60 years	22/55.0
60 – 75 years	18/45.0
<b>Gender (n/%)</b>	
Male	13/32.5
Female	27/67.5
<b>Education (n/%)</b>	
Elementary	4/10.0
Junior High	12/30.0
Senior High	16/40.0
University	8/20.0
<b>Diabetes duration (n/%)</b>	
2 – 3 years	26/65.0
4 – 6 years	14/35.0
<b>Family support (n/%)</b>	
Low	2/5.0
Moderate	5/12.5
High	33/82.5

1 In Table 1, the results show that the age of the respondents has a mean of 59.5 with a standard deviation of 8.108 within the range of 45 - 75 years. The age group of 46 – 60 years constitutes 55.5%, while the age group of 60 – 75 years is 45.0%. Regarding the gender distribution of the respondents, males account for 32.5%, and females account for 67.5%. The educational levels of the respondents, those with an elementary school education are 10.0%, junior high school graduates are 30.0%, high school graduates are 40.0%, and University

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are 20.0%. Furthermore, in terms of the duration of suffering from DM among the respondents, 65.0% have been dealing with it for 2 – 3 years, while 35.0% have been experiencing it for 4 – 6 years. Based on the questionnaire data for family support, 5.0% of respondents are classified as having low support, 12.5% as moderate support, and 82.5% as high support.

Table 2. Family Support and Patients with Diabetic Foot Ulcer (N=40)

Variables	Family Support			p-value
	Low (n=20)	Moderate (n=12)	High (n=8)	
<b>Diabetic Foot Ulcer (n/%)</b>				
With foot ulcer	18/82.5	5/12.5	0/0.0	0.027
Without foot ulcer	2/17.5	7/87.5	8/100.0	

In Table 2, the results of bivariate analysis yield a p-value of 0.027. For those with low family support, the occurrence of foot ulcer is 82.5%, while the absence of foot ulcer is 17.5%. Furthermore, for those with moderate family support, the occurrence of foot ulcer is 12.5%, and the absence of foot ulcer is 87.5%. Meanwhile, for those with high family support, the occurrence of foot ulcer is 0.0%, and the absence of foot ulcer is 100.0%.

## DISCUSSION

Diabetes Mellitus is a heterogeneous group of disorders characterized by elevated blood glucose levels or hyperglycemia (Fatimah, 2015). DM is referred to as a "great imitator" (similar to other diseases) because it can affect all organs of the body, causing various complaints and varying symptoms. If DM is not treated properly, it can lead to complications (Laoh, Putung, Tololiu, Tandiyuk, Terok, & Bobaya, 2017). Family is the most important part for everyone, including individuals with DM going through challenging times. It truly requires assistance from those around, especially family members, by informing them about their condition, which will have an effect on increasing patient compliance in carrying out programs and treatments. This statement proves that close individuals or family play a crucial role in preventing DM complications (Fitriyanti, Febriawati, & Yanti, 2019).

DM ulcers, known as diabetic ulcers, are a form of chronic DM complications in the form of open ulcer on the skin surface that may be accompanied by local tissue death or neuropathic ulcers (Permadani, & Maliya, 2017). DM ulcers are open ulcers on the skin surface due to blockages in blood vessels. The blockage occurs in the feet, and peripheral neuropathy due to high blood sugar

levels, causing patients not to feel the presence of ulcers (Yunir, Tahapary, Tarigan, Harbuwono, Oktavianda, Kristanti, & Soewondo, 2021). Family is the smallest unit in society, consisting of a head of the family and several people who gather and live together in one area, depending on each other (Musdiaman, Yusuf, Afelya, & Hidayah, 2020). Family support is the attitude, actions, and acceptance of the family towards the sick person. The support given includes informational support, appraisal support, instrumental support, and emotional support (Friedman, Bowden, & Jones, 2010).

Individuals with DM need to control their metabolism, which can affect the patient's lifestyle (in using insulin therapy and oral antidiabetes drugs), food, blood sugar measurement, and exercise (Creatore, Moineddin, Booth, Manuel, DesMeules, McDermott, & Glazier, 2010). This can be achieved through family participation or involvement. The difficulty experienced by patients, their families, and the complications that arise as patients adapt to all changes can negatively impact quality of life. However, family support can maintain metabolic control that affects the patient's quality of life, increasing it by 35% after family support is fulfilled.

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Family is a group of two or more people bound by blood, marriage, or adoption, living together in one house. Even if they live separately, they still care for each other. Family plays a crucial role for patients, and good disease management behavior needs to be done, with family participation required to provide support (Ningrum, & Rosyid, 2018). Family support is the attitude, actions, and acceptance of the family towards the sick person, including informational support, appraisal support, instrumental support, and emotional support (Nuraisyah, Kusnanto, & Rahayujati, 2017).

Family support is not just about providing assistance; what matters is how the recipient evaluates the meaning of that assistance. This perception is closely related to the appropriateness of the support given, meaning that someone who receives it truly feels the benefits of that support. This happens because it is real and provides satisfaction (Yusra, & Waluyo, 2022). Comprehensive management for DM patients is expected to be able to overcome and avoid DM wound complications and achieve good health (Haas, Maryniuk, Beck, Cox, Duker, Edwards, & Youssef, 2012). Support is crucial in dealing with ulcers caused by Diabetes Mellitus (DM). Family members can provide extra attention to assist wound care and provide emotional support to boost patient morale. Open communication and family education about DM treatment can also strengthen recovery efforts.

Individuals with diabetes mellitus (DM) may not always immediately experience ulcers for several reasons. One of them is diabetic neuropathy, where high blood sugar levels can damage nerves, reduce pain sensation, and cause patients not to feel ulcers or pressure that can lead to ulcers. In addition, individuals with well-controlled blood sugar levels through proper management may have a lower risk of ulcers. Good management may include a healthy diet, regular exercise, and the use of medication as instructed by a doctor. However, it is important to note that each patient has a unique condition, and it is better to discuss the DM patient's health condition with a doctor for a deeper understanding.

The results of the analysis of the relationship between family support and the incidence of ulcers in diabetic patients obtained a p-value of  $0.027 < \alpha$  value of 0.05, so  $H_0$  is rejected and  $H_1$  is accepted,

thus indicating a relationship between family support and the incidence of ulcers in diabetic patients.

Family support can play a crucial role in managing diabetes mellitus. Patients with good family support tend to be more capable of managing their conditions well, including maintaining a healthy diet and exercising regularly. The occurrence of ulcers in diabetic patients can be reduced if there is supportive family support for a healthy lifestyle and active monitoring of health conditions.

Family support can play a crucial role in diabetes mellitus management. Patients with good family support tend to be more capable of managing their conditions well. Conversely, a lack of support can lead to stress, depression, and non-compliance with treatment, which can worsen diabetes and increase the risk of ulcers. Family support helps motivate patients to maintain a healthy diet, exercise regularly, and control blood sugar levels, all of which contribute to preventing ulcers and diabetes-related complications.

## CONCLUSION

Family support has a significant impact on the management or care of individuals with DM to minimize the occurrence of foot ulcers. In fact, with high family support, the risk of foot ulcers occurrence can be reduced by up to 100%.

## SUGGESTION

The importance of management and care for individuals with DM involves efforts to enhance the knowledge of both the affected individuals and their families regarding proper management, preventing the occurrence of DM-related foot ulcers. Providing information is not limited to the affected individuals alone but also involves engaging the family, ensuring that family members understand the aspects of family support that should be provided for individuals with DM.

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