Original Article

Enhancing Wound Healing through Family Support among Diabetes Mellitus Patients: A Study at Bekasi District Hospital

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Abstract

Background: Diabetes mellitus encompasses a range of metabolic disorders marked by chronic hyperglycemia due to impaired insulin secretion or resistance. One of its serious complications is delayed wound healing, particularly in cases involving gangrene, which demands prolonged medical care. Emotional and practical support from family members plays a crucial role in enhancing patients' motivation, emotional well-being, and recovery outcomes.
Objective: This study aimed to evaluate the influence of family support on the effectiveness of wound care in patients with diabetes mellitus.
Methods: A quantitative, quasi-experimental study was conducted using a one-group pretest-posttest design. The research involved 30 diabetic patients suffering from gangrenous wounds, selected through total sampling. Data were analyzed using univariate and bivariate approaches, with statistical significance tested via the Wilcoxon signed-rank test.
Results: The findings demonstrated a statistically significant effect of family support on wound healing outcomes in diabetic patients ($p = 0.000$, $p < 0.05$).
Discussion: The presence of supportive family members appears to positively influence the recovery process by fostering patient motivation and adherence to treatment protocols. These results highlight the critical role of family involvement in managing chronic wound care.
Conclusion: Family support significantly contributes to successful wound healing in diabetic patients, as observed in Bekasi Regency Hospital.

Keywords : Diabetes Mellitus, Family Support, Wound Healing, Quasi-Experimental, Chronic Care, Patient Recovery

INTRODUCTION

Diabetes mellitus is a metabolic disorder primarily marked by elevated blood sugar levels (hyperglycemia), which can lead to damage in both large and small blood vessels, as well as impair nerve function (1). It is a chronic condition that occurs either because the pancreas does not produce enough insulin, the body becomes resistant to insulin, or a combination of both. Uncontrolled diabetes can result in serious complications involving the

heart, blood vessels, eyes, kidneys, and nerves, and may even become life-threatening if diet and lifestyle are not properly managed ((2)). Broadly, diabetes mellitus encompasses a range of metabolic disturbances, all characterized by persistent hyperglycemia due to impaired insulin production or action (3). According to Indonesia's Basic Health Research report in 2018, the nationwide prevalence of diabetes mellitus diagnosed by physicians was 1.5%. This means that approximately 1,500 out of every 100,000 Indonesians have been diagnosed with diabetes. This prevalence shows an increase compared to the findings reported in the 2013 RIKESDAS survey. DKI Jakarta had the highest prevalence at 2.6%, while the province of East Nusa Tenggara (NTT) reported the lowest at 0.6% (4).

According to the International Diabetes Federation (IDF) report in 2021, approximately 537 million adults aged 20–75 years — about one in every ten individuals globally — are living with diabetes mellitus. Indonesia ranks fifth worldwide, with an estimated 19.47 million people affected. In West Java, the prevalence of diabetes mellitus ranks 21st out of 36 provinces. In Bekasi Regency, data from 2022 shows that 35,628 individuals with diabetes mellitus received standardized healthcare services, representing 92.80% of the targeted 38,392 patients. In Indonesia, the incidence of diabetic wounds remains high, affecting roughly 16% of all people living with diabetes. This translates to around 1.7 million cases among the country's 10.9 million diabetes patients. At the Bekasi Regency Hospital, the number of patients with diabetic wounds has shown notable fluctuations over recent years. In 2020, there were 5 outpatient cases and 158 inpatient cases; in 2021, these numbers rose to 20 outpatients and 92 inpatients. By 2022, the hospital recorded 19 outpatient and 125 inpatient cases, while in 2023, the figures surged to 160 outpatients and 160 inpatients. As of 2024, there were 91 outpatient visits and 59 inpatient admissions for diabetic wounds. On average, the hospital manages about 200 cases annually, with the highest number recorded in 2023, reaching 320 cases among diabetes mellitus patients. Bekasi Regency Hospital serves as one of the major referral centers in the region for the management of diabetes mellitus and its complications. In 2022 alone, the hospital treated approximately 2,000 DM cases, most of which involved diabetes-related wounds (5).

If an ulcer becomes infected and is not properly treated, it can worsen, leading to tissue decay and, in severe cases, the need for amputation (6). According to (7), wound care is a crucial step in promoting faster healing and minimizing the risk of infection. Indicators of wound healing include a decrease in wound size, a reduction in exudate and pus, the formation of granulation tissue and new skin, and changes in the wound's color (8). The healing process for wounds in individuals with diabetes mellitus is influenced by several factors, with family support being one of the most significant contributors (9).

Family support refers to the assistance provided by family members, which encompasses emotional, informational, instrumental, and appraisal support (10). It represents the family's genuine acceptance and commitment through both attitudes and tangible actions. Families are often seen as the closest and most reliable source of support, always ready to offer help when needed (11). Family support plays a crucial role in enhancing a patient's self-esteem, as it makes patients feel valued and loved, helping them accept their illness with greater sincerity and optimism. This emotional resilience ultimately contributes to better treatment adherence and healing. Key components of family support include providing information, offering appreciation, delivering practical assistance, and giving emotional comfort. Moreover, strong family support positively influences both the mental and physical health of all family members (12,13). Conversely, a lack of family support can negatively impact the quality of life of individuals with diabetes mellitus. According to (14) factors that shape family support stem from both internal and external sources. Internal factors include family members' understanding, education level, emotional state, and spiritual well-being, while external factors relate to their socioeconomic circumstances. Research by (15) also found that family support significantly improves the quality of life in people living with diabetes. Overall, family support is recognized as a key determinant in promoting wound healing among patients with diabetes (16).

According to preliminary data gathered through interviews with 10 patients with diabetes mellitus who had wounds at Bekasi District Hospital, it was found that 7 out of 10 patients sought hospital care independently without family accompaniment. These patients explained that their family members were often too busy

and unable to allocate time to assist them. Although the cost of treatment itself was covered by BPJS insurance, patients mentioned that transportation expenses were borne personally, making regular visits challenging. Consequently, some patients reported missing scheduled appointments due to financial constraints. Conversely, three patients attended their treatment sessions with the support of family members, and they emphasized that ongoing emotional and logistical support from their families greatly encouraged them to adhere to wound care routines.

METHODS

Study Design

This research employed a quantitative approach with a quasi-experimental design, specifically utilizing a one-group pretest-posttest format. The study was conducted at Bekasi Regency Hospital during July 2024. The study population consisted of all patients diagnosed with diabetes mellitus who presented with diabetic wounds, totaling 30 participants. A total sampling technique was applied, meaning that every eligible patient meeting the inclusion criteria was selected to participate.

Data Collection

Data collection instruments included two validated and reliable questionnaires: one assessing family support and another measuring the success of wound healing. Data were gathered through direct administration of these questionnaires to participants during their treatment period.

Data Analysis

For data analysis, both univariate and bivariate statistical methods were used. Univariate analysis described the characteristics of the study participants, while the Wilcoxon signed-rank test was applied for bivariate analysis to assess the differences between pre-intervention and post-intervention outcomes.

Ethical Consideration

Ethical approval for the study was obtained from the appropriate Ethics Committee prior to the commencement of research activities. Participants were informed about the purpose and procedures of the study, and written informed consent was secured. Confidentiality and anonymity of participants' information were strictly maintained throughout the research process.

RESULTS

The respondent characteristics examined in this study included age, gender, and occupation among individuals with diabetes mellitus who also had diabetic wounds. The univariate analysis in this research produced the following results :

Univariate Analysis

Table 1. Respondent Characteristics Based on Age, Gender, and Occupation in DM Patients

Characteristics	Frequency	Percentage %
Age		
20-30	1	3.3%
31-40	7	23.3%
>40	22	73.3%
Gender		
1	11	36.7%
2	19	63.3%
Work		
1	18	60.0%
2	6	20.0%
3	6	20.0%

The age distribution of the respondents shows that the majority, 73.3%, were over 40 years old. Meanwhile, 23.3% of the respondents were between 31–40 years old, and only 3.3% were aged 20–30 years. These findings suggest that the prevalence of diabetes mellitus accompanied by wound complications increases significantly with age. As individuals grow older, the decline in body function,

including insulin production and tissue healing capacity, may contribute to a greater risk of diabetic wounds.

In terms of gender, 63.3% of the respondents were female, while 36.7% were male. This indicates that women represented the majority of diabetic wound patients in this study. Higher rates of diabetes mellitus among women may be associated with factors such as differences in fat distribution, hormonal changes, particularly during menopause, and lifestyle factors.

Regarding occupation, 60.0% of the respondents were categorized into group 1 (likely housewives or non-working individuals), 20.0% into group 2, and another 20.0% into group 3 (likely representing various working professions). The dominance of non-working individuals suggests that lower levels of physical activity, often associated with sedentary lifestyles, may contribute to the development of diabetes mellitus and the severity of its complications, including wound healing problems.

Bivariate Analysis

Table 2. Wilcoxon test

Variables	Z	P. Value
Wound healing success - Family support	-5477	0.000

The bivariate analysis examined the relationship between family support and the success of wound healing in patients with diabetes mellitus. The analysis using the Wilcoxon Signed Rank Test produced a Z value of -5.477 with a p-value of 0.000. Since the p-value is less than 0.05, it can be concluded that there is a statistically significant relationship between family support and the success of wound healing. This finding indicates that higher levels of family support are strongly associated with improved wound healing outcomes among diabetes mellitus patients.

DISCUSSION

The findings of this study revealed that there were 30 respondents with diabetes mellitus, the majority of whom were over 40 years old. The results indicated that individuals aged above 40 are more vulnerable to developing diabetes mellitus. The researchers noted that as people age, their bodily functions naturally decline, leading to a reduced effectiveness of insulin activity, which in turn causes elevated blood glucose levels. These results are consistent with previous research conducted by a research institution, which also found that individuals over the age of 40 are at higher risk for diabetes mellitus due to a decrease in the number of functional β-cells responsible for insulin production.

The results of this study showed that, among the 30 respondents, the majority were women. Gender is recognized as one of the factors influencing the incidence of diabetes mellitus. Several studies have reported that diabetes is more prevalent among women. This trend is attributed to higher cholesterol levels in women compared to men, as well as differences in lifestyle habits that significantly impact diabetes risk. Typically, body fat accounts for 15–20% of a man's body weight, while women generally have a higher fat composition, contributing to a greater susceptibility to diabetes—estimated to be three to seven times higher than in men. Research conducted by (17) also found that the proportion of women diagnosed with diabetes mellitus was higher than that of men. The higher percentage of body fat in women increases the likelihood of obesity, which is closely linked to the risk of developing diabetes. Additionally, a study by (18) highlighted that the decrease in estrogen levels, particularly during menopause, is a major contributing factor to the higher rates of diabetes among women.

The study findings revealed that the majority of the 30 respondents were housewives. Occupational factors are known to significantly influence the risk of developing diabetes mellitus. Engaging in light physical activity during daily tasks may lead to reduced energy expenditure, causing excess energy to be stored as body fat. This accumulation of fat can result in

obesity, which is a major risk factor for diabetes mellitus. These results are consistent with research conducted by (19), which found that most participants were housewives, accounting for 22 respondents. This suggests that housewives may be at greater risk of developing diabetes mellitus due to lower levels of physical activity.

The results of the study showed that the Asymp. Sig value was 0.000, which is less than 0.05, indicating that Ha was accepted and Ho was rejected. This demonstrates a significant effect of family support on the success of wound care among patients with diabetes mellitus at Bekasi Regency General Hospital. The family, as the smallest social unit, plays a crucial role in shaping individual development and determining life outcomes. Families are essential in supporting their members' growth, providing guidance for decision-making, and offering necessary care (20). Core elements of family support include the attitudes, actions, and acceptance shown among family members, reflecting their role as an integral part of the family system. Support may be provided in both material and non-material forms, encompassing verbal or non-verbal communication, advice, suggestions, and other tangible assistance. Additionally, emotional support — demonstrated through physical presence and caring behavior — has a powerful influence, helping recipients feel valued, nurtured, and positively impacted by the support they receive (21).

Wound care is a structured series of interventions aimed at accelerating the healing process, preventing infection, and protecting the skin and mucous membranes from further damage. Such injuries may arise from various causes, including trauma, fractures, or surgical procedures, all of which can compromise skin integrity (22). The findings of this study are consistent with previous research conducted by (15), who examined "family support and the quality of life among patients with type II diabetes mellitus at the Keling 1 Health Center in Jepara Regency." Fadya's study revealed that 34.5% of patients reported high family support, while 60.0% reported low support. Similarly, research conducted by (23) demonstrated, through the Wilcoxon Signed Rank Test, a significance value (SIG) of 0.000, which is below the threshold of 0.05. These results confirm that Ho was rejected and Ha was accepted, indicating a significant effect of family support on the success of wound care in patients with diabetes mellitus. In this study, the Wilcoxon test analysis also produced a p-value of 0.000, further supporting the acceptance of Ha and the rejection of Ho. Based on these findings, it can be concluded that family support significantly contributes to the effectiveness of wound healing in individuals with diabetes mellitus.

Study Limitations

While this study offers important insights into the impact of family support on wound healing among patients with diabetes mellitus, several limitations should be acknowledged. First, the quasi-experimental design with a single group and no control group limits the ability to draw firm conclusions about causality. Second, the relatively small sample size of 30 participants from a single hospital may not accurately represent the broader diabetic population, thus limiting the generalizability of the findings. Third, the use of self-reported questionnaires to measure family support and wound healing outcomes may have introduced response bias. Additionally, this study did not extensively account for external variables such as socioeconomic status, comorbid conditions, or variations in lifestyle, all of which could have influenced the results. Future research should consider larger sample sizes, the inclusion of control groups, and a multicenter approach to provide stronger and more comprehensive evidence.

CONCLUSION

This study demonstrated that family support plays a crucial role in the success of wound care among patients with diabetes mellitus. The findings showed a significant relationship between the presence of strong family support and improved wound healing outcomes, as indicated by statistical analysis using the Wilcoxon Signed Rank Test (p-value = 0.000 < 0.05). The characteristics of respondents, including age, gender, and occupation, further highlighted specific factors contributing to diabetes mellitus risk, with a notable prevalence among individuals over 40 years old, women, and housewives. The study emphasizes the importance of involving family members actively in the care process to enhance treatment adherence, emotional well-being, and healing outcomes. Strengthening family involvement is essential for optimizing the quality of life and recovery of patients living with diabetes-related wounds.

Implication

The results of this study suggest that healthcare providers should actively involve family members in the care and management of patients with diabetes mellitus, particularly in wound care practices. Educational interventions aimed at increasing family knowledge and participation may enhance patient outcomes, reduce complications, and improve overall quality of life. Hospitals and clinics should consider developing structured family-based support programs as part of comprehensive diabetes management strategies.

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Author Contribution

MS : Conceptualization and Study Design, Methodology, Data Curation, Writing – Original Draft, Writing – Review & Editing
SN and NA : Conceptualization and Study Design, Methodology, Formal Analysis,

Conflict of Interest

The authors declare that there are no conflicts of interest related to the conduct, analysis, or publication of this study.

REFERENCES

1. Mataputun, Donny Richard. D. Penyakit Endokrin. 1st ed. Sirait MJF, editor. Vol. 19. Jakarta: Yayasan Kita Menulis; 2024. 218 p.
2. Longo M, Zatterale F, Naderi J, Parrillo L, Formisano P, Raciti GA, et al. Adipose tissue dysfunction as determinant of obesity-associated metabolic complications. Int J Mol Sci. 2019;20(9):2358.
3. Sartika M, Irawan P. Hubungan Perilaku Sedentari Dengan Kadar Gula Darah Pada Pasien Diabetes Melitus di Rumah Sakit Sentra Medika Cikarang Tahun 2022. Jurnal Ilmiah Kesehatan. 2023;
4. Riskesdas. Laporan Nasional Riset Kesehatan Dasar. Kementrian kesehatan RI. 2018;1–582.
5. Dinas Kesehatan Kabupaten Bekasi. Profil Kesehatan Kabupaten Bekasi Tahun 2020. Dinas Kesehatan Kabupaten Bekasi. 2021;2013–5.
6. Sartika, Mila., Ratu Najla. RA. Faktor-faktor Yang Berubungan dengan Kejadian Ulkus Diabetika Pada Penderita DM Tipe II Di RSUD DR. Chasbullah Abdulmadjid Kota Bekasi. Repositori Medika Suherman. 2021;
7. Syokumawena, Mediarti D, Ramadhani P. Perawatan Luka Metode Moist Wound Healing Pada Pasien Diabetes Melitus Tipe Ii Dengan Masalah Gangguan Integritas Jaringan: Studi Kasus. Aisyiyah Medika. 2023;3(2):312–8.
8. Association AD. Standards of medical care in diabetes-2015 abridged for primary care providers. Clin Diabetes [Internet]. 2015 Apr;33(2):97–111. Available from: https://pubmed.ncbi.nlm.nih.gov/25897193
9. Angga Saeful Rahmat. Dukungan Keluarga Dan Kepatuhan Pengobatan Terhadap Kejadian Hipoglikemia Pada Pasien Diabetes Melitus Tipe II Di PoliklinikPenyakit Dalam RSUD Bayu Asih Purwakarta. Jurnal Ilmiah Kesehatan. 2021;
10. Sartika, Mila. PS. Hubungan Dukungan Keluarga Dengan Kepatuhan Minum Obat Pasien Diabetes Melitus Tipe 2 di Puskesmas Sukajaya. Cakrawala Medika: Journal of Health Sciences. 2023;02:15.
11. Dewi Dolifah. Dukungan Keluarga Pada Lansia Penderita Diabetes Melitus Terhadap Resiko Terjadinya Luka Diabetik Di Wilayah Binaan Puskesmas Kota Keler. 2023;4:1045–50.
12. Puspasari S, Eliawati E. The Effect of Audiovisual-Based Education Media on Self Management in Type 2 Diabetes Mellitus Patients in the Work Area of UPT Puskesmas Ledeng. Jurnal Keperawatan Komprehensif

(Comprehensive Nursing Journal). 2022;8(Special Edition).
13. Dilworth L, Facey A, Omoruyi F. Diabetes mellitus and its metabolic complications: the role of adipose tissues. Int J Mol Sci. 2021;22(14):7644.
14. Cahyaningrum N. Hubungan Dukungan Keluarga Dengan Kejadian Luka Pada Penderita Diabetes Melitus Di Kabupaten Magelang Tahun 2020. 2020.
15. Said A, Mikawati M, Rahmadania W, Mudatsir A. Diabetes Distress: Assessment And Screening Of Stress Levels Among People With Diabetes Mellitus. Jurnal Keperawatan Komprehensif (Comprehensive Nursing Journal). 2022;8(2).
16. Zorena K, Jachimowicz-Duda O, Ślęzak D, Robakowska M, Mrugacz M. Adipokines and obesity. Potential link to metabolic disorders and chronic complications. Int J Mol Sci. 2020;21(10):3570.
17. Pramesti TA, Andriyana AAGA, Wardhana ZF. Dukungan Keluarga dan Tingkat Stres Pasien Diabetes Melitus Tipe 2. Bali Health Journal. 2019;3(2):79–86.
18. Yılmaz Karadağ F, Saltoğlu N, Ak Ö, Çınar Aydın G, Şenbayrak S, Erol S, et al. Foot self-care in diabetes mellitus: Evaluation of patient awareness. Prim Care Diabetes. 2019 Dec;13(6):515–20.
19. Mawaw PM, Yav T, Mukuku O, Lukanka O, Kazadi PM, Tambwe D, et al. Prevalence of obesity, diabetes mellitus, hypertension and associated risk factors in a mining workforce, Democratic Republic of Congo. Pan Afr Med J [Internet]. 2017 Nov 30;28:282. Available from: https://pubmed.ncbi.nlm.nih.gov/29942414
20. Dewi Dolifah. Dukungan Keluarga Pada Lansia Penderita Diabetes Melitus Terhadap Resiko Terjadinya Luka Diabetik Di Wilayah Binaan Puskesmas Kota Keler. 2023;4:1045–50.
21. Angga Saeful Rahmat. Dukungan Keluarga Dan Kepatuhan Pengobatan Terhadap Kejadian Hipoglikemia Pada Pasien Diabetes Melitus Tipe II Di PoliklinikPenyakit Dalam RSUD Bayu Asih Purwakarta. Jurnal Ilmiah Kesehatan. 2021;
22. Syokumawena, Mediarti D, Ramadhani P. Perawatan Luka Metode Moist Wound Healing Pada Pasien Diabetes Melitus Tipe Ii Dengan Masalah Gangguan Integritas Jaringan: Studi Kasus. Aisyiyah Medika. 2023;3(2):312–8.
23. Harista RA, Lisiswanti R. Depresi pada Penderita Diabetes Mellitus Tipe 2. Majority. 2015;4(9):73–7.