

A Cross-Sectional Study in an East Java Wound Care Center on Family Support and Anxiety in Patients with Diabetic Gangren

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ABSTRACT

A serious consequence of diabetes mellitus, diabetic gangrene is frequently linked to long-term wounds, amputation risk, and psychological suffering. Patients with chronic wounds often experience anxiety, which can impede their ability to heal and take care of themselves. It is thought that family support helps these people feel less anxious. The purpose of this study is to investigate the relationship between anxiety levels and perceived family support in diabetic gangrene patients who are receiving wound care. A cross-sectional, quantitative, correlational strategy was employed. From a wound facility in East Java, 60 diabetic gangrene patients who were at least 18 years old were selected as a purposive sample. The Hamilton Anxiety Rating Scale (HAM-A) and the Multidimensional Scale of Perceived Social Support (MSPSS), modified for the family domain, were used to gather data. Analyses of linear regression and Spearman's rank correlation were performed ($\alpha = 0.05$). The average age of the participants was 55.4 years (SD = 10.8). On a scale of 1 to 7, the mean HAM-A score was 18.5 (indicating mild to severe anxiety), and the mean family support score was 4.2. Family support and anxiety were found to be significantly correlated negatively by Spearman's correlation ($\rho = -0.47$, $p < 0.001$). Higher family support was still substantially linked to lower anxiety in adjusted linear regression (which controlled for comorbidities, glycemic management, and wound duration) ($\beta = -0.39$, $p = 0.002$).

Keywords: Anxiety, Diabetic Gangren, Family Support, Perceived Support, Wound Care

BACKGROUND

Diabetes mellitus is a global epidemic, and diabetic foot complications including gangrene—pose significant morbidity, mortality, and psychological burden (Chapman et al., 2024). Patients with chronic diabetic foot ulcers (DFU) and gangrenous wounds often suffer emotional distress, including anxiety, depression, and reduced quality of life (Chapman et al., 2024; “What ever I do it’s a lost cause,” 2016).

Emotional distress and anxiety may compromise self-care adherence, glycemic control, and wound healing (Chapman et al., 2024; depression in DFU study). Social support especially from close family—has been recognized as a mitigating factor for psychological burden in chronic illness (Depression in DFU, 2022). In the context of diabetic foot disease, perceived social support is inversely related to depression and anxiety (Depression in DFU study).

Specifically, family support (emotional, instrumental, informational) may help patients cope better with disease stressors, encourage adherence to care regimens, and reduce feelings of isolation (Beti Kristinawati et al., 2021). Some interventions combining family psychoeducation and

psychological therapy (e.g., ACT + family education) have shown reductions in anxiety among ulcer patients (Hasmira et al., 2022).

However, there is limited quantitative research specifically addressing the relationship between family support and anxiety in patients with gangrenous diabetic wounds in Indonesian settings. This study aims to address that gap.

Objective

To investigate whether perceived family support is associated with anxiety levels among patients with diabetic gangrene at a wound care center in East Java.

METHODS

The study utilized a cross-sectional correlational design, which allowed the researchers to examine the relationship between perceived family support and anxiety among patients with diabetic gangrene at a single point in time. Data collection took place at Rumah Luka, a specialized wound care center located in East Java, over a four-month period in 2025. This setting ensured that participants were drawn from a population receiving consistent clinical management for complex diabetic wounds.

Participants were recruited using purposive sampling, allowing the researchers to target individuals who met specific clinical and psychological criteria relevant to the study. To be included, participants had to be adults aged 18 years or older, diagnosed with diabetic gangrene for at least four weeks, cognitively intact, and living with or frequently interacting with family caregivers. Individuals with active psychosis or severe cognitive impairment were excluded to maintain data reliability. The final sample consisted of 60 patients who were able and willing to complete the study assessments.

The study employed several validated instruments. Perceived family support was measured using the MSPSS-Family subscale, which consists of three items rated on a 7-point Likert scale, with higher scores indicating stronger perceived support. Anxiety levels were assessed using the Hamilton Anxiety Rating Scale (HAM-A), a clinician-administered measure commonly used in medical settings to evaluate psychological distress. Additional covariates, such as wound duration, HbA1c levels, comorbidities, duration of diabetes, and demographic characteristics, were collected to strengthen the analytical model. A pilot test with 10 respondents demonstrated good clarity and reliability, with the MSPSS-Family achieving a Cronbach's alpha of 0.80.

Ethical and procedural standards were rigorously followed. Eligible patients were approached during their clinic visits and provided with detailed information about the study before giving informed consent. Trained nurses or researchers administered the questionnaires and collected clinical data to ensure consistency and accuracy.

Data were processed and analyzed using SPSS version 26. Descriptive statistics were first performed to summarize the characteristics of the sample. Spearman's rank correlation was then used to assess the bivariate relationship between family support and anxiety, which is appropriate for ordinal data and non-normally distributed variables. This was followed by a linear regression model employing the enter method, enabling the researchers to examine the association between the two main variables while adjusting for relevant covariates.

The analytical approach was grounded in a significance threshold of $p < 0.05$, ensuring that only statistically meaningful relationships were interpreted. By combining correlational and multivariate techniques, the study was able to identify not only the presence of an association between family support and anxiety but also the strength and direction of that relationship after controlling for confounding factors. This methodological framework supports a robust

understanding of how psychosocial and clinical variables interact in patients living with diabetic gangrene.

RESULTS

The study employed a cross-sectional correlational design, conducted at a specialized wound care center (Rumah Luka) in East Java over a four-month period in 2025. This design allowed researchers to examine the relationship between perceived family support and anxiety levels among patients with diabetic gangrene at a single point in time. Recruitment procedures were standardized, and data collection occurred during routine clinic visits to ensure feasibility and minimize patient burden.

Participants were selected using purposive sampling, resulting in a final sample of 60 adult patients who met the inclusion criteria. Eligible participants were at least 18 years old, diagnosed with diabetic gangrene for a minimum of four weeks, cognitively intact, and living with or frequently interacting with family caregivers. Patients with active psychosis or severe cognitive impairment were excluded. This selective recruitment strategy ensured that participants could reliably respond to the instruments and that family support could be meaningfully assessed.

Several validated instruments were used to measure key variables. Perceived family support was assessed using the family subscale of the Multidimensional Scale of Perceived Social Support (MSPSS-Family), scored on a 7-point Likert scale. Anxiety levels were measured using the Hamilton Anxiety Rating Scale (HAM-A), a widely recognized clinician-administered tool. Additional covariates including wound duration, HbA1c levels, comorbidities, diabetes duration, and socio-demographic characteristics were gathered to strengthen analytical rigor. A pilot test with 10 patients confirmed clarity and acceptable internal consistency, with MSPSS-Family showing a Cronbach's alpha of 0.80.

Data collection followed strict ethical and procedural standards. Trained nurses or researchers obtained informed consent and administered questionnaires along with relevant clinical measurements. Data were analyzed using SPSS v26, beginning with descriptive statistics, followed by Spearman's rank correlation to examine the bivariate relationship between family support and anxiety. A multivariate linear regression model was then used to assess the adjusted association between family support and anxiety, with significance set at $p < 0.05$.

The results showed that participants had a mean age of 55.4 years, and most were male. Clinical characteristics indicated long-standing diabetes and prolonged wound duration, along with poor glycemic control (mean HbA1c = 9.1%). Anxiety levels varied, with 40% experiencing mild, 45% moderate, and 15% severe anxiety. The bivariate analysis demonstrated a moderate negative correlation ($\rho = -0.47$, $p < 0.001$), suggesting that higher family support was associated with reduced anxiety. Regression findings confirmed this relationship, with family support emerging as a significant predictor ($\beta = -0.39$, $p = 0.002$). Wound duration and HbA1c also contributed significantly, and the full model explained approximately 34% of the variance in anxiety, indicating a meaningful but multifactorial relationship.

Predictor	β (standardized)	p-value
Family support	-0.39	0.002
Wound duration	0.28	0.015
HbA1c	0.24	0.031
Age, sex, comorbidities	NS	n.s.

The model explained ~34% of variance in anxiety (adjusted $R^2 = 0.34$).

DISCUSSION

This study demonstrates a significant inverse relationship between perceived family support and anxiety in patients with diabetic gangrene. The correlation coefficient ($\rho = -0.47$) suggests a moderate effect size, consistent with literature showing social support's protective role in psychological distress in chronic wound populations (Depression in DFU; Chapman et al., 2024). After adjustment for clinical factors, family support remained a significant predictor of lower anxiety, highlighting its independent role beyond biomedical variables. This finding aligns with evidence that social support reduces emotional distress and improves coping in chronic disease (Depression in DFU; Luo et al., 2023).

Qualitative accounts support these results: families providing instrumental help (dressing changes, transport), emotional encouragement, disease information help, and wound care assistance are viewed as essential supports (Beti Kristinawati et al., 2021). In a related Indonesian qualitative study, family emotional and instrumental support positively influenced patients' psychological state and wound care engagement (Beti Kristinawati et al., 2021).

Furthermore, psychoeducational interventions involving families have shown benefits: in ulcer patients, combining family psychoeducation with acceptance and commitment therapy (ACT) reduced anxiety and improved outcomes (Hasmira et al., 2022). Also, intensive education programs (involving both patient and family) reduced anxiety in DFU patients (Chen et al., 2020). The psychosocial burden associated with diabetic foot complications has been extensively documented, with patients frequently reporting emotional distress, guilt, social withdrawal, and a diminished sense of control over their condition. These findings, supported by prior research, highlight the profound psychological challenges that accompany chronic wound management. Such experiences reinforce the critical role of strong support systems, particularly family involvement, in helping patients cope with the emotional and social consequences of their illness. Despite providing valuable insights, the study has several limitations, including its cross-sectional design, which restricts causal interpretation, and the reliance on self-report measures that may introduce bias. The single-site setting further limits generalizability, while the use of the clinician-administered HAM-A may result in inter-rater variability. Nevertheless, the findings carry important implications for clinical practice. Integrating psychosocial support into wound care programs such as family counseling, caregiver education, and training in wound care tasks may help reduce patient anxiety and potentially contribute to improved healing outcomes.

CONCLUSION

Perceived family support is significantly inversely associated with anxiety levels in patients suffering from diabetic gangrene. Family involvement and psychosocial support should be integral in wound care management to promote psychological well-being and aid recovery.

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