

Exploring the correlation of social networks, family support, health worker assistance, and health education using the precede-proceed model: impact on emotional responses in diabetes mellitus patients

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Abstract

Diabetes Mellitus is a chronic disease that has the potential to cause stress due to uncertainty about the course of the disease, treatment, and complications. The aim of this research was to analyze the relationship between the support of health workers, family support, social networks, and health education through the precede-proceed model approach to emotional responses. The type of research is a cross-sectional study. The research was conducted at the Simo Mulyo Health Center in Surabaya, with data collected from June to July 2023. The independent variables, namely the support of health workers, family support, social networks, and

health education, were measured using a questionnaire, while the dependent variable, emotional response, was measured using a questionnaire. The population in this study comprised all people with diabetes Mellitus registered at the Simo Mulyo Health Center in Surabaya. The inclusion criteria for this study were as follows: patients with unstable blood sugar regulation, aged between 26 and 65 years, capable of reading, and willing to be respondents. The sample size in this study was 112 respondents, and the sampling technique used was simple random sampling. Data analysis utilized the Spearman rho correlation test with a significance level of $\alpha=0.05$. The findings indicate that social network support and emotional response, with a p-value of 0.000 ($p<0.005$) and $r=0.879$. Health education is correlated with emotional response, with a p-value of 0.000 ($p<0.005$) and $r=0.585$. Health worker support is correlated with dealing with emotional responses, with a p-value of 0.000 ($p<0.005$) and $r=0.786$. Family support is correlated with emotional response, with a p-value of 0.000 ($p<0.005$) and $r=0.738$. Social network support, health education, family support, and health worker support correlate with the emotional response of people with diabetes Mellitus. Therefore, health workers, families, and social networks can enhance support to improve the quality of the patient's emotional response, promoting patient enthusiasm for adhering to treatment and minimizing complications due to diabetes Mellitus.

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Introduction

Diabetes Mellitus (DM) is classified as one of the Non-Communicable Diseases (NCDs).¹ It is a chronic condition that has the potential to induce stress, stemming from uncertainty regarding the disease's progression, treatment, and complications due to insufficient insulin production by the pancreas.² The ability to respond positively to stressors and manage emotions is crucial in the treatment of this disease. The prolonged duration of treatment can lead sufferers to experience feelings of hopelessness, fear, anxiety, and depression.³

In 2021, the International Diabetes Federation (IDF) recorded 537 million people living with diabetes.⁴ Indonesia ranks seventh globally in the number of people with diabetes Mellitus (DM), totaling 19.47 million people, indicating a prevalence of 10.6%. The 2018 Riskesdas results reveal that the prevalence of DM with a doctor's diagnosis has increased by 2% from the original 2013 prevalence of 1.5%.⁵ DM is the primary chronic disease associated with severe psychosocial problems.⁶ Riskesdas data from 2018 indicates that the prevalence of emotional disorders in individuals aged 15 years and over increased from 6% to 9.8%, with the prevalence of depression sufferers reaching 6.1%.⁷ Factors influencing the psychological adjustment in individuals with DM, according to the precedence-procedure theory, include predispos-

ing factors such as age, education, employment status, and knowledge. Enabling factors encompass the distance of residence and family income, while reinforcing factors involve peer support, health workers, and family.⁸ Individuals with diabetes are at a high risk of decreased psychological well-being, with over 40% experiencing emotional aspects.⁹ This is attributed to changes in treatment and health well-being since diagnosis. People with diabetes often report difficulty accepting a diagnosis of a long-term condition that necessitates constant self-management.¹⁰ This difficulty leads to various psychological reactions, including rejection and avoidance, resulting in poor glycemic control. Reinforcing factors from the environment, in the form of support from health workers, family, and friends, significantly contribute to enhancing the optimism of individuals with chronic diseases, thereby reducing psychological burdens.¹¹ Other research indicates that individuals with diabetes generally experience greater anxiety compared to patients with other diseases.¹² Increased support serves as reinforcement and is essential to reduce fear, anxiety, and depression, fostering positive emotional responses. The aim of this research was to analyze the relationship between the support of health workers, family support, social networks, and health education using the preceed-proceed model approach to understand emotional responses.

Materials and Methods

This research was meticulously crafted as a cross-sectional study, homing in on individuals grappling with Diabetes Mellitus at Simo Mulyo Health Center in Surabaya. A carefully curated group of 180 respondents actively participated, meeting stringent inclusion criteria that encompassed patients contending with unstable blood sugar regulation, individuals aged between 26 and 65 years,

those possessing reading capabilities, and a willingness to be respondents. To guarantee the representativeness of the sample, a methodical approach employing simple random sampling was undertaken. The study delved into diverse independent variables, including the examination of health worker support, family dynamics, social networks, and health education. The focal point of investigation revolved around the emotional response of the participants, serving as the dependent variable. Methodologically, data collection was executed using a meticulously designed questionnaire, rigorously validated, and tested for reliability. This meticulous approach aimed to ensure the robustness and accuracy of the results. The subsequent analysis employed the Spearman rho correlation test, with a predetermined significance level set at $\alpha=0.05$. Moreover, ethical considerations played a pivotal role throughout the research process. The study garnered ethical clearance from the Chakra Brahmanda Lentera Institute under the reference number 094/010/VII/EC/KEP/ LCBL/2023, thereby attesting to its unwavering commitment to upholding ethical standards and guidelines.

Results

Table 1 presents the demographic data of the respondents. In this study, most respondents were classified as late elderly (37.5%), with a significant portion employed in the private sector (74.1%). Furthermore, a predominant percentage of respondents had attained primary education as their highest educational level (60.7%). Regarding the duration of suffering from diabetes Mellitus, the majority reported a duration of 6 months to 1 year (78.6%), and a significant proportion had never been treated in a hospital for their condition (61.6%). Table 2 illustrates the social network support among respondents, with the majority reporting

Table 1. Demographic characteristics of the respondent.

Characteristics	Frequency (n)	Percentage (%)
Age (year)		
26-35	12	13.4
36-45	10	8.9
46-55	26	23.2
56-65	42	37.5
>65	19	17
Total	112	100
Work		
Government employees	12	10.7
Private sector employees	83	74.1
Pension	6	5.4
Trader	8	7.1
Doesn't work	3	2.7
Total	112	100
Education		
Primary education	68	60.7
Secondary education	31	27.7
High education	13	11.6
Total	112	100
Long suffered		
6 month - 1 year	88	78.6
2 year - 5 year	24	21.4
Total	112	100
Hospital experience		
Been in hospital	43	38.4
Never been in hospital	69	61.6
Total	112	100

Table 2. Variable characteristics.

Characteristics	Frequency (n)	Percentage (%)
Social network		
Good	14	12.5
Enough	57	50.9
Not enough	41	36.6
Total	112	100
Health education		
Good	83	74.1
Enough	17	15.2
Not enough	12	10.7
Total	112	100
Family support		
Good	20	74.1
Enough	77	15.2
Not enough	15	10.7
Total	112	100
Health worker support		
Good	32	28.6
Enough	70	62.5
Not enough	10	8.9
Total	112	100
Emotional response		
Good	26	23.2
Enough	41	36.6
Not enough	45	40.2
Total	112	100

sufficient support (50.9%). The health education received by respondents was predominantly deemed good (74.1%), while family support was largely considered sufficient (68.8%). Additionally, a substantial proportion of respondents indicated receiving adequate support from health workers (62.5%), and the emotional response of the respondents was largely characterized as sufficient (40.2%). Table 3 show the correlation between social network support and emotional response, with a p-value of 0.000 ($p < 0.005$) and $r = 0.879$. Health education is correlated with emotional response, with a p-value of 0.000 ($p < 0.005$) and $r = 0.585$. Health worker support is correlated with dealing with emotional responses, with a p-value of 0.000 ($p < 0.005$) and $r = 0.786$. Family support is correlated with emotional response, with a p-value of 0.000 ($p < 0.005$) and $r = 0.738$.

Discussion

The results indicate that the social network has an effect on the patient's emotional response, implying that the better the patient's social network, the better their emotional response to their illness. This finding aligns with research conducted by Moulaei *et al.* (2022). Social networking refers to the connection of people with diabetes Mellitus to others, including friends, both individually and organizationally, physically, and through social media. In this study, indicators include social activities, roles and interaction intensity outside the home, friendships, and frequency of interaction.¹³ A strong social network assists sufferers in developing their emotional responses and helps them avoid fear, anxiety, and depression. This is consistent with the findings of the Schram *et al.* (2021) study, which asserts that robust social networks for people with diabetes Mellitus can enhance emotional relationships. Sufferers receive more attention, affection, and care from those around them, enabling them to manage emotional symptoms arising from diabetes Mellitus, such as increased anxiety, irritability, and frequent discomfort.¹⁴

The results indicate that family support has an effect on the emotional response of sufferers, signifying that good support from the family can improve the emotional response of individuals in coping with their illness. This finding aligns with the research conducted by Wulandari *et al.* (2021), which emphasizes the essential role of family support for the elderly in the treatment process. Physical limitations experienced by elderly sufferers necessitate support from the family in various forms, including informational, instrumental, emotional, and appreciation support.¹⁵ The family can serve as a potent motivator for individuals with diabetes Mellitus in terms of glycemic control, particularly when they consistently offer companionship to the elderly during health facility visits and actively engage in problem-solving with them.¹⁶

Another study conducted by Mphasha *et al.* (2022) stated that family support plays a crucial role in therapy, especially when provided to elderly patients. It is a vital aspect in empowering the elderly for engaging in activities and fostering a desire to explore and adopt new things or novel concepts.¹⁷ Various forms of family support encompass emotional, instrumental, informational, and evaluative support in responding to illness.¹⁸ According to the researchers' assumptions, the family can serve as a source of information, offer emotional support, accompany sufferers to health services, and provide feedback on efforts made to treat their illness. Sufficient family support can assist sufferers in managing emotional responses. For instance, the assumption is that robust family support can alter a person's perception of an illness, thereby

Table 3. Correlation test.

Variable	Coefficient correlation	p
Social network support and emotional response	0.879	0.000
Health education and emotional response	0.585	0.000
Health worker support and emotional response	0.786	0.000
Family support and Emotional response	0.738	0.000

reducing the potential for stress.¹⁹ Family support has the potential to bring inner peace and positivity to the elderly, influencing them to think and engage in positive activities, consequently reducing the incidence of depression in this demographic.¹⁸

The results indicate that the support of health workers influences the emotional response of sufferers. The attention provided by health workers in the form of information and feedback serves as effective assistance for sufferers in achieving proper care. This finding aligns with the study conducted by Kalra *et al.* (2018), which highlights that good support from health workers leads to positive emotional responses, improving the coping mechanisms of sufferers. This positive coping, in turn, fosters adherence to both pharmacological and non-pharmacological medication therapy.¹⁹ Health workers' support is considered integral to the success of patients in avoiding depression.²⁰ Various forms of support from health workers, including emotional support, information, instruments, and assessments, are consistently required to motivate individuals with diabetes Mellitus to undergo treatment.

Health education also plays a role in affecting the emotional response of sufferers, aligning with the responsibilities of health workers as health promoters. Health workers are tasked with providing preventive, promotive, curative, and rehabilitative services. In line with Chawla *et al.*'s (2019) perspective, effective prevention efforts involve health workers, who are respected individuals within the community. When people with diabetes Mellitus receive advice from health workers, they gradually adhere to the guidance provided. Therefore, the substance of advice material and education is crucial to achieving overall well-being.²¹

Another perspective asserts that information provided by health workers inspires sufferers to think more constructively, leading to favorable emotional responses.²² Once individuals receive information about the possibility of a disease through various channels, according to problem-solving theory, they become motivated to return to a state of normality free from problems. This process involves giving meaning to the problem.²³ Based on the theory of the precede-proceed model, reinforcing factors are crucial in shaping the behavior of individuals with DM. The quality of support from social networks, health education, and health workers significantly influences the level of activity in sufferers. This, in turn, helps them avoid feelings of despair during treatment, enabling them to persevere without complaint and fatigue, and maintain good glycemic control.

Conclusions

Social network support, health education, family support, and health worker support are correlated with the emotional response of individuals with DM. Continuous efforts are required to build and enhance support, aiming to improve the quality of the patient's emotional response. This is crucial for individuals with DM to be free from fear, anxiety, and depression. A positive emotional

response significantly influences the patient's coping mechanisms, fostering adherence to the ongoing treatment, thereby minimizing complications associated with DM.

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