Relationship between Family System Support and Diet Compliance in Diabetes Mellitus Patients

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ABSTRACT

The diabetes diet is carried out to regulate eating patterns according to the portions determined for DM sufferers. by maintaining the 3Js, namely the number, type, and schedule of the DM diet. The research aims to determine the relationship between Family System Support and Diet Compliance in Diabetes Mellitus Patients. This type of research has a quantitative and descriptive design. The research population was 228 diabetes mellitus patients, and the sample was 39 people, using an accidental sampling technique. The research instrument is a questionnaire, and computerized data processing using SPSS, with univariate and bivariate data analysis. The research results showed that the majority of respondents in the Family Support System group were 39 people lacking (56.5%) and respondents in the non-compliant group were 44 people (63.8%). The results of the chi-square test showed that there was a relationship between family support system and dietary compliance in diabetes mellitus patients with p.value = 0.015 < 0.05. It is hoped that the health center will provide education and information to DM patients by making leaflets and posters about DM, especially DM treatment to control blood glucose levels and prevent complications and always socialize something new to treat DM by continuing to update knowledge about DM in particular.

Keywords: family support system, compliance, diet, diabetes mellitus

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder characterised by elevated blood glucose levels (hyperglycaemia) caused by an imbalance between insulin supply and demand (Nagesh et al., 2020). The lack or absence of insulin causes glucose to be retained in the blood, raising blood glucose levels, while depriving cells of glucose needed for cell survival and function (Hantzidiamantis et al., 2024).

The main problem in patients with diabetes mellitus is an increase in blood glucose levels called hyperglycaemia (Kawahito et al., 2020). Hyperglycaemia in patients with diabetes mellitus leads to complications (Mohajan & Mohajan, 2023). Complications of diabetes mellitus are divided into microvascular and macrovascular complications (Alaboud et al., 2016). Microvascular complications include those affecting the eyes (retinopathy), kidneys (nephropathy) and skin (dermopathy) (Patil & Shrivastava, 2014). Meanwhile, complications

included in macrovascular complications include heart disease, myocardial infarction, stroke, hypertension, neuropathy and vascular disease (Zakir et al., 2023).

In the community, the main obstacle to the dietary management of diabetes mellitus is the patient's saturation in following the dietary therapy, which is very necessary to achieve success (Petroni et al., 2021). The implementation of the diabetes mellitus diet is strongly influenced by the support of the family. Support can be described as a feeling of belonging or the belief that someone is actively participating in daily activities. Feeling intertwined with others in the environment creates strength and helps reduce feelings of isolation (Luthfa & Ardian, 2019). One way to maintain blood glucose levels is through dietary regulation. Diet for DM patients aims to maintain and maintain an optimal level of health so that they can carry out activities as usual, and diet is the beginning of controlling blood sugar levels in people with DM (Asif, 2014).

Diet is carried out to regulate the diet according to the portion determined in patients with DM (Sami et al., 2017) by maintaining 3J (quantity, type and DM diet schedule) namely the amount, type and schedule of the DM diet. The right amount of calories to be consumed by people with DM is done by measuring the exact portion of food to be consumed with a certain amount at each meal and snack. Adherence to diet is very important because it can improve the quality of life of patients and reduce DM disease rates, while the patient's non-compliance causes acute and chronic complications, which in turn aggravates the condition of the disease and can even cause death (Khayyat et al., 2019).

Based on an initial survey conducted by the author at the Rejosari Health Center, it is known that the number of patients with diabetes mellitus in the January period of 2024 was 228. Based on this data, a survey was conducted by looking at the visit data for the last 3 months, 97 people were diagnosed with DM. besides that the researchers also conducted a survey with 10 people with DM, the results showed that 6 people said they often consumed sweet foods and drinks such as compote, ice mix, syrup and others, this illustrates that the 6 people often consume sweet foods and drinks. mix, syrup and others, this illustrates that the 6 people are not compliant in carrying out a diabetic diet. This study differs from others that solely concentrate on DM patients adhering to the diet. In order to determine the diet for one of the family members of DM patients, the researcher attempted to include the family as the primary support system in this study. Based on the background that has been described above, the authors are interested in conducting research with the title "Relationship between Family Support System and Diet Compliance of Diabetes Mellitus Patients at Rejosari Pekanbaru Health Center".

METHODS

Study Design and Setting

This study uses a quantitative method and is descriptive in nature. Correlation with a cross-sectional approach is the research strategy that was employed. This approach involves observing the research object simultaneously, namely dietary adherence characteristics and changes in blood sugar levels in diabetes patients with Diabetes Mellitus.

Samples

The sampling procedure must be consulted in order to determine the sample According to (Sugiyono, 2019) the sample technique refers to a method used to select samples. The accidental sampling strategy, which involves selecting up to 39 samples by chance to meet respondents who attended the Rejosari Health Center in Pekanbaru City in compliance with the established inclusion and exclusion criteria, was employed in the study.

Sample selection criteria, namely inclusion and exclusion criteria, are also used in the sample determination process. The following are the sample's inclusion criteria: 1) individuals having a diabetes mellitus diagnosis 2) patients who are open to participating in surveys 3) patients with whom can communicate. Exclusion criteria include circumstances that prevent research from being conducted and circumstances in which the research subject does not meet the requirements to be included in a research sample. Exclusion criteria: 1) those who are unable to converse effectively are excluded from the sample, and 2) patients who are ill and unable to take the responder test.

Instruments

Ibnu Hadjar defines the research instrument as "a measuring tool used to obtain quantitative information about the variation of variable characteristics objectively" (Sami et al., 2017). The study's questionnaire, which was used in the research instrument, has already undergone validity testing. The diet compliance questionnaire consists of 20 questions about the kind of foods that need to be taken into consideration (13–20), the number of calories required (statement items 1-7), and the eating plan to follow (statement items 8–12) (Sami et al., 2017).

where range 30 is derived from the difference between the greatest and lowest values with the outcomes of two categories (diabetic mellitus patients' compliance: compliance and non-compliance), and n = category. These calculations can be understood as follows: if a respondent scores 51–80, they fall into the compliant category; if they score 20–50, they fall into the non-

compliant category. The researcher also uses a Likert scale questionnaire to measure the variables related to the family support system. Regarding affirmative responses, you will receive a score of 4 for Very Often, a score of 3 for Often, a score of 2 for Seldom, and a score of 1 for Never. Regarding the negative assertions, you will receive a score of 1 if you respond Very Often, a score of 2 if you respond Often, a score of 3 if you respond Seldom, and no score of 3, at one point awarded a 4.

Data Analysis

The analysis approach will include both univariate and bivariate analyses using computer programs. Univariate analysis, which is carried out for every variable in the study findings, is part of the data analysis plan for this investigation. It was to describe and elucidate the characteristics of each variable, this kind of analysis usually simply produces the precipitation and frequency distribution for each variable. Bivariate analysis is also used in the plan to describe the link between independent and dependent variables. If certain conditions are satisfied, the chi-square test is performed to ascertain whether there is a link between the two variables. Fisher's Exact Test is used as the following step if these requirements are not met.

Ethical Consideration

Before the research was conducted, this study had passed the ethical test from the ethical commission of the faculty of nursing (022/PN-EC/R/IX/2024). In this study, informed consent was provided in the questionnaire link. If the respondent agreed to be involved in this study, then the informed consent was accepted, and continued to fill out the questionnaire. If the respondent is not willing, the informed consent is rejected and the questionnaire link will be submitted. This study used four ethical principles, namely respect for human dignity, confidentiality, justice, and beneficence. In the principles of confidentiality and anonymity, the searcher did not put the respondent's name on the questionnaire, so the respondent did not need to write his name. Then the results of this study were only accessed by the researcher.

RESULTS

The research results are explained in accordance with the research objectives. The research results include respondent characteristics, family support systems and dietary patterns in diabetes mellitus patient respondents.

Tabel 1. Frequency Distribution of Respondent Characteristics at Puskesmas Rejosari Pekanbaru

Characteristics	Frequency (f)	Percentage (%)
Age		
Late teens	2	5,1
Early adulthood	9	23,1
Intermediate Adults	28	71,8
Education		
Low	4	10,3
Intermediate	30	76,9
High	5	12,8
Work		
Work	28	71,8
Not Working	11	28,2

The table above shows that more than half of the respondents a total of 28 people (71.8%) were Intermediate Adults, showed that more than half of the respondents in the intermediate education group were 30 people (76.9%), showed that more than half of the respondents in the non-working group were 28 people (71.8%).

Tabel 2. Frequency Distribution of Respondents' Family Support System and Diet in Respondents' Mellitus Diabetic Patients at the Rejosari Health Center in Pekanbaru

Variable	Frequency (f)	Percentage (%)
Family's Support System		
Good	18	46,2
Less	21	53,8
Diet in Diabetic Mellitus Patients		
Obedient	11	28,2
Non-Compliance	28	71,8

The table above shows that more than half of the respondents in the family support system group lacked 21 people (53.8%). It shows that that more than half of the respondents in the non-compliant group were 28 people (71.8%).

Tabel 3. The Relationship Between Family System Support and Patient Dietary Adherence Diabetes Mellitus at the Rejosari Health Center Pekanbaru

Family's Support System	Diet in Diabetic Mellitus				Total		*p* value	OR
	Obedient		Non-Compliance					
	n	%	n	%	N	%		
Good	9	50,0	9	50,0	18	100	0.015	9.500
Less	2	9,5	19	90,5	21	100		
Total	11	28,2	28	71,8	39	100		

The results show that out of 18 respondents who received good family support, 9 people (50%) adhered to the diet, while 9 people (50%) did not adhere to the diet. In contrast, among the 21 individuals who received poor family support, 2 people (9.5%) adhered to the diet, while 19

people (90.5%) did not adhere to the diet. The chi-square test results indicate that there is a relationship between family support and dietary adherence among diabetes mellitus patients at Puskesmas Rejosari Pekanbaru (p-value = 0.015 < 0.05), with an odds ratio (OR) of 9.500, meaning that respondents with poor family support are 9 times more likely to be non-compliant with their diet.

DISCUSSION

Characteristics of Respondent's Age

The study's findings indicate that the bulk of respondents (71.8%) were over 35 years old. Research indicates a noteworthy correlation between dietary adherence and age (Zaragoza-Martí et al., 2020). Investigation of older adults' memory for checking their blood sugar four times within a set period of time. According to his research, there is no correlation between age and adherence when it comes to managing DM diet adherence (Pratiwi et al., 2021).

The risk of type II diabetes mellitus varies with age. Because blood glucose levels rise in direct proportion to age, type II diabetes mellitus and glucose tolerance problems are more common in older adults. Beginning at the level of cells, tissues, and organs, the aging process that occurs after the age of thirty will cause changes in the body's anatomy, physiology, and biochemistry that may have an impact on homeostasis. The neurological system, target tissue cells that make glucose, the pancreas, which produces the hormone insulin, and other hormones that influence blood glucose levels are among the organs whose functions vary as we age. An increase in blood glucose levels will result from a malfunction in the hormone insulin's release or from insufficient cellular usage of glucose (Nakrani et al., 2020).

Researchers have found that a patient's compliance with managing their chronic illness is significantly influenced by family support. By influencing the sufferer's lifestyle, friends and family can promote good health, and the loss or diminution of support can have detrimental effects on health. Among other things, the benefits of social support can affect one's physical and emotional well-being as well as their quality of life. Conversely, poor glycemic control and care neglect may arise from a lack of familial support.

Characteristics of Respondent's Education and Work

According to the study's findings 76.9% were in the intermediate education group, whereas 10.3% were in the low education group. The education and work characteristics of respondents

with diabetes mellitus are critical factors influencing their self-management and overall health outcomes. Education plays a vital role in empowering individuals with diabetes to engage in effective self-management behaviors.

For instance, a study by Bukhsh et al. found that only 21% of respondents with university-level education demonstrated maximum knowledge about diabetes, suggesting that educational background significantly influences diabetes knowledge and self-care practices (Bukhsh et al., 2019). Similarly, Luambano et al. reported that individuals with primary and post-primary education were more likely to possess adequate knowledge regarding diabetes mellitus, reinforcing the idea that education plays a critical role in health literacy (Luambano et al., 2023).

Socioeconomic factors, including education and employment status, also play a significant role in the prevalence and management of diabetes mellitus. Furthermore,, studies have shown that patients with lower socioeconomic status often have limited access to healthcare resources and diabetes education, which can exacerbate their condition (Kusumaningrum & Ricardo, 2022). This relationship underscores the need for targeted educational programs that address the specific needs of lower socioeconomic groups to improve diabetes management outcomes.

The Relationship Between Family System Support and Dietary Adherence of Diabetic Mellitus Patients at the Rejosari Health Center Pekanbaru

Based on the results of data analysis with the chi square test, it shows that there is a relationship between family system support and dietary adherence diabetic mellitus patients at the Rejosari Pekanbaru Health Center with an OR value = 9.500, which means that respondents who do not get family support system are 9 times at risk of not adhering to the diet. This is supported by the correlation of 18 respondents who Getting family system support in the good category there are 50% who are compliant in diet and 50% who are not compliant with the diet. Meanwhile, of the 21 people who received family system support in the lack of category, there were 9.5% who were compliant in diet and 19.5% do not adhere to the diet.

Dietary control is one strategy to keep blood sugar levels stable. Diet is the first step in controlling blood sugar levels in DM patients, and food arrangements for these patients are designed to maintain an ideal level of health so they may continue with their regular activities (Collado-Mateo et al., 2021). By adhering to 3J the quantity, kind, and timing of the DM diet diets are implemented to control the diet in accordance with the portion that is established in patients with DM. Accurately measuring the portion of food to be ingested in a specific amount

at each meal and in between meals helps persons with diabetes mellitus consume the appropriate number of calories (Herrera & Chan, 2018). Dietary adherence is crucial because it can enhance a patient's quality of life and lower the incidence of diabetes mellitus, whereas non-adherence results in acute and long-term problems that ultimately worsen the disease's state and may even be fatal (Hassan et al., 2021).

The majority of respondents 59.1% followed the diabetes mellitus diet, Dietary adherence and blood sugar levels in individuals with diabetes mellitus are significantly correlated, as evidenced by the Spearman Rho test results (Crespo et al., 2020). This implies that blood sugar levels will be controlled the more compliantly a person with diabetes mellitus follows their diet. Based on the findings of Alfina's study (2018), showed in three of the four journals, there was a connection between DMT2 patients' dietary adherence and family support. DMT2 patients adhere to their diets better when their families encourage them. According to the study's findings, dietary adherence in DMT2 patients may be impacted by family support. In order for the patient's family support to improve (Tafoya, 2023).

Researchers hypothesize that patients' compliance with self-management of their chronic illnesses is significantly influenced by family support (Chen et al., 2018). By influencing the sufferer's lifestyle, friends and family can promote good health, and their absence or diminished support can have detrimental effects on health. Among other things, quality of life, bodily health, and emotional well-being can all benefit from social support. On the other hand, inadequate glycemic control and care neglect may arise from a lack of family support. The degree to which a patient complies with the directives of the medical team is referred to as compliance. Medication adherence in practice is described as the patient's degree of treatment and the conduct that the physician or medical staff recommends, such as that which is advised for patients with diabetes (Capoccia et al., 2016).

CONCLUSION

According to the findings of a study conducted at the Rejosari Pekanbaru Health Center, dietary adherence and family system support were significantly correlated in patients with diabetes mellitus. 28 respondens, or 71.8% of the total, were between the ages of 21 and 34. The majority of them 21 individuals, or 46.2% did not receive enough help from the family system. Furthermore, the majority of respondents 28 individuals, or 71.8% were also included in the group that did not follow the suggested dietary guidelines.

The study emphasizes the value of family support in assisting those with diabetes mellitus in following their dietary regimens. Success in preserving the patient's health may depend on the family's level of support.

LIMITATION

The conducted research is inextricably linked to the presence of several research constraints, including the restrictions of research tools, because respondents were dishonest when completing the surveys, there is a chance that the information used in the research may be biased. Furthermore, the researcher only obtained 39 samples for this study due to time constraints, which means that the quantity of samples is not reached.

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