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Article

THE RELATIONSHIP BETWEEN FAMILY SUPPORT AND DIABETES MELLITUS PREVENTION BEHAVIOR IN PREDIABETES PATIENTS

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ABSTRACT

Background: The increasing number of prediabetes cases in Indonesia indicates the need for more effective prevention strategies, especially through the role of family support. This study aims to analyze the relationship between family support and diabetes mellitus prevention behavior in prediabetes patients in Pasirnanjung Village, Cimanggung Health Center working area.
Objective: -
Methods: This study used a correlational quantitative design with a *cross-sectional* approach. The sample amounted to 94 respondents selected through total sampling technique. The independent variable is family support, and the dependent variable is diabetes mellitus prevention behavior. The instruments used included the *Hensarling's Diabetes Family Support Scale* (HDFSS) and *the UK Diabetes and Diet Questionnaire* (DIAPBA). Data were analyzed using *Spearman* correlation test.
Results: The results showed that most respondents had a level of family support in the good category (59.60%) and preventive behavior in the moderate category (50.0%). There is a significant positive relationship between family support and diabetes mellitus prevention behavior (p = 0.000; r = 0.617).
Conclusion: The higher the family support, the better the preventive behavior shown by prediabetes patients.

INTRODUCTION

According to (American Diabetes Association, 2025) Prediabetes is a condition in which blood glucose levels are higher than normal, but do not yet meet the criteria to be diagnosed as type 2 diabetes mellitus. This condition reflects the presence of impaired glucose tolerance (IGT) and/or impaired fasting glucose (IFG). Prediabetes is characterized by fasting glucose levels between 100-125 mg/dL, glucose levels two hours after the oral glucose tolerance test (TTGO) between 140-199 mg/dL, or HbA1c levels between 5.7%-6.4%. Although often asymptomatic, prediabetes is a major risk factor for developing type 2 diabetes mellitus and other cardiometabolic complications, if not addressed with appropriate lifestyle changes.

In Indonesia, the incidence of diabetes mellitus continues to increase, and much of it stems from undetected or poorly managed prediabetes. According to the Indonesian Health Survey (IHS), by 2023, the prevalence of diabetes mellitus in Indonesians aged 15 years and above will reach 11.7%. This is an increase from 10.9% in 2018. This suggests that there is an increasing number of people with impaired glucose metabolism, including prediabetes.

The main factors in the prevention of diabetes mellitus include a healthy diet, physical activity, and lifestyle which includes stress management, smoking habits. Efforts to prevent diabetes mellitus face various challenges, mainly due to the lack of public awareness of

(Sukenty et al., 2018), 56.4% of respondents had an unhealthy diet, with calorie intake exceeding 119% of the RDA, which contributed to increased blood sugar levels. Smoking habits are also a problem, where 54.7% of respondents are smokers or passive smokers, which are known to damage glucose metabolism in the body. The results of the study (Purba et al., 2021) showed that 75% of respondents had inactive physical activity. The combination of poor diet, lack of physical activity, and genetic factors is a major challenge in efforts to prevent diabetes mellitus.

As a prevention effort, the Indonesian Ministry of Health through the Department of Health (DHO) and Puskesmas has conducted various programs such as the Healthy Living Community Movement (GERMAS), Posbindu PTM (Integrated Coaching Post for Non-Communicable Diseases), and educational campaigns on the importance of healthy eating and physical activity. In its implementation at Puskesmas Cimanggung, Sumedang Regency, the program showed effectiveness as an early detection effort for diabetes mellitus and played a role in preventing the progression of prediabetes conditions to diabetes mellitus.

The role of the family is also very important in the prevention of diabetes mellitus, because it can improve the ability of diabetic patients in dietary management and physical activity (exercise). *Self-care activities* related to dietary management, physical activity (exercise) and medication are important aspects for diabetic patients and require support, not only emotional support but also informational, appreciative and instrumental support (Rahmi & Malini, 2021). Lack of support from family and social environment can also hinder prevention efforts. Someone who does not get support in adopting a healthy lifestyle tends to find it difficult to maintain good habits such as exercising regularly and managing their diet (Rambe et al., 2023).

METHODS

Research Design

The research design used in this study is quantitative with a correlational approach where this study aims to determine the relationship between family support and diabetes prevention behavior in prediabetes patients. This study uses a *cross-sectional study* approach method, which allows researchers to collect data quickly, does not require a long time for observation, and is often more cost-effective than longitudinal studies that observe changes in data over time.

Sample and Sampling Technique

The population in this study were 94 people in Pasirnanjung Village who had blood sugar levels in the prediabetes range. The sampling technique of this study was Total Sampling, which is where the researcher uses the entire total population as a sample. The sample inclusion criteria used are as follows: 1) Patients who have been diagnosed with prediabetes from the puskesmas; 2) Prediabetes patients who live with family at least one family member; 3) Aged 20-50 years.

Instrument

The instrument used was *Hensarling's Diabetes Family Support Scale* (HDFSS) for family support, this questionnaire was developed by Hensarling (2009), modified and translated by (Ersawati & Rosyid, 2024). In the questionnaire there are dimensions of Emotional Support, Instrumental Support, Informational Support and Assessment Support with a total of 29 statements and *the UK Diabetes and Diet Questionnaire* (DIAPBA) for preventive behavior, this questionnaire includes dimensions of Stress Management, Healthy Food / Healthy Diet, Unhealthy Food / Unhealthy Diet, High Risk Behavior, and Self-Care with a total of 20 statements. Both questionnaires have been modified, customized and retested for validity and reliability by the researcher.

Procedure

Data in this study were collected using the questionnaire method. This questionnaire was designed to measure factors that contribute to diabetes mellitus prevention behavior. Data collection in this study was conducted in two sessions, where respondents were divided into two groups with different implementation times. Data collection was conducted in conjunction with the implementation of the Posbindu program organized by the Puskesmas, thus facilitating coordination with participants and increasing time efficiency..

Data Analysis

This study used univariate and bivariate analysis. Univariate analysis in this study was used to describe the characteristics of each variable, such as age, gender, education level, occupation, and family history with

diabetes. Bivariate analysis aims to determine the relationship between family support and diabetes mellitus prevention behavior in prediabetes patients using the help of the SPSS program. Data normality test was conducted with Kolmogorov-Smirnov, which showed a significance value <0.05 so that the data was not normally distributed. Therefore, the analysis continued using non-parametric statistical tests, namely the Spearman Correlation test. This test produces a correlation coefficient (rho) value to measure the strength of the relationship as well as a p-value to determine significance, with the decision that $p < 0.05$ indicates a significant relationship between the two variables.

Ethical Consideration

In conducting this research, researchers have paid attention to and applied the principles of research ethics to maintain the rights, dignity, and safety of participants. The ethical aspects that have been implemented include: 1) *Informed Consent*, before filling out the questionnaire, the researcher has given an informed consent sheet to each respondent. This sheet contains information regarding the purpose, benefits, research procedures, as well as the respondent's right to refuse or stop participation at any time without any consequences. 2) Anonymity, in the data collection process, the researcher did not include the full name of the respondent on the questionnaire or data collection results. 3) Confidentiality, the researcher guarantees that all information obtained during the research will be kept confidential. Data and personal identities that may be obtained through informed consent are stored securely and not disseminated. Sensitive information will not be published and will only be used for research analysis purposes.

RESULT

Table 1 Respondent Demographic Results

Age of Respondents		
Min	**Max**	**Average**
21 years old	50 Years	38 Years
Gender		
	N	**%**
L	14	14,9
P	80	85,1
Total	94	100,0
Last Education		
	N	**%**
D3 / S1	13	13,8%
HIGH SCHOOL	63	67,0%
JUNIOR HIGH SCHOOL	18	19,1%
Total	94	100,0%
Occupation		
	N	**%**
HOUSEWIFE	28	29,8%
Private Employee	38	40,4%
CIVIL SERVANTS	22	23,4%
Not Working	6	6,4%
Total	94	100,0%
Family History of Diabetes Mellitus		
	N	%
No	74	78,7%
Yes	20	21,3%
Total	94	100,0%

Based on table 1. The age of respondents is in the range of 21 to 50 years, with an average age of 38 years. In terms of gender, most of the respondents were female 80 people or 85.1%. The latest educational background of most respondents with a high school education level was 63 people (67.0%). Employment as a private employee is the most with a total of 38 people (40.4%). Family history of diabetes mellitus, 74 respondents (78.7%) did not have a family history of diabetes.

Table 2 Family support and preventive behavior

Family Support				
	N	Mean	Median	Maximal
Less family support	9 (9,60%)			
Sufficient Family Support	29 (30,90%)	85.74	94.00	116
Good Family Support	56 (59,60%)			
Family Support Domain				
	Lack	Enough	Good	
Emotional Support	10 (10,6%)	42 (44,7%)	42 (44,7%)	
Instrumental Support	9 (9,6%)	45 (47,9%)	40 (42,6%)	
Informational Support	39 (41,5%)	12 (12,8%)	43 (45,7 %)	
Appraisal Support	38 (40,4%)	19 (20,2%)	37 (39,4%)	
Diabetes Mellitus Prevention Behavior				
	N	Mean	Median	Maximal
Less	9 (9,6%)			
Fair	47 (50,0%)	76.17	71.00	100
Good	38 (40,4%)			
Diabetes Mellitus Prevention Behavior Domain				
	Less	Enough	Good	
Stress Management	9 (9,6%)	29 (30,9%)	56 (59,6%)	
Healthy Food	14 (14,9%)	42 (44,7%)	38 (40,4%)	
Unhealthy Food	24 (25,5%)	21 (22,3%)	49 (52,1%)	
High Risk Behavior	51 (54,3%)	3 (3,2%)	40 (42,6%)	
Self-Care	9 (9,6%)	24 (25,5)	61 (64,9%)	
Total		94	100%	

Based on table 2 The results of the analysis show that family support for prediabetes patients in Pasirnanjung Village shows that more than half of the respondents have good family support, as many as 56 respondents (59.60%). Meanwhile, 29 respondents (30.90%) received sufficient family support. With a mean-median of 85.74-94.00 and a maximum value of 116. In terms of diabetes mellitus prevention behavior, the results showed that half of the total respondents, 47 people (50.0%) had sufficient prevention behavior. Followed by 38 respondents (40.4%) who showed good preventive behavior. With a mean-median value of 76.17-71.00 and a maximum value of 100 . In the family support domain, informational support is the most influential domain where 43 respondents (45.7%) have good instrumental support. In the diabetes mellitus prevention behavior domain, self-care showed the most influential domain with 61 respondents (64.9%) having good self-care.

Table 3 Relationship between Family Support and Diabetes Mellitus Prevention Behavior in Prediabetes Patients

Variable	Sig. (2-tailed)	Correlation Coefficient
Family Support	.000	.615

Diabetes Mellitus Prevention Behavior

The results of the Spearman's rho correlation test showed a positive and strong relationship between the two variables, with a correlation coefficient of 0.615. The significance value (2-tailed) obtained is 0.000 ($p < 0.05$), which indicates that the relationship between family support and diabetes mellitus prevention behavior is significant. The correlation coefficient of 0.615 indicates a strong positive relationship between family support and diabetes mellitus prevention behavior.

DISSCUSSION

Based on the analysis of demographic data that has been carried out, a fairly diverse and representative picture of the characteristics of the respondents is obtained. In terms of age, the age range of respondents ranged from 21 to 50 years with an average age of 38 years. This age distribution shows that most respondents are in the productive age group, where the risk of prediabetes begins to increase with age. This condition is in line with the literature which states that the prevalence of prediabetes tends to increase in the adult age group, especially after the age of 35 years.

From a gender perspective, the results showed that most of the respondents were female, reaching 80 people (85.1%) compared to male respondents who only amounted to 14 people (14.9%). The educational characteristics of the respondents showed that most had a secondary education background, with 63 people (67.0%) having a high school education, followed by 18 respondents with a junior high school education (19.1%), and 13 respondents with a D3 / S1 education (13.8%). This distribution of education levels reflects the general condition of rural communities in Indonesia, where secondary education is still the majority. This relatively good level of education is expected to support respondents' understanding of health information and the importance of diabetes mellitus prevention behavior. In terms of occupation, private employees dominated with 38 people (40.4%), followed by housewives as many as 28 people (29.8%), civil servants as many as 22 people (23.4%), and respondents who did not work as many as 6 people (6.4%). This occupational distribution shows that most respondents have relatively active activities, both in the work sector. The aspect of family history of diabetes mellitus showed that most respondents, namely 74 people (78.7%), did not have a family history of diabetes mellitus, while 20 people (21.3%) had a family history of diabetes mellitus. Although most respondents did not have a family history of diabetes mellitus, the prediabetes condition experienced shows the importance of other factors such as lifestyle, diet, and physical activity in the development of this condition. Respondents with a family history of diabetes mellitus need special attention because they have a higher risk of developing diabetes mellitus.

The results of the analysis showed a P value of 0.000, which indicated a significant relationship between family support and diabetes mellitus prevention behavior. The results of this study are in line with the research of Mufida et al. (2024) which showed that diabetic patients with good family support succeeded in making efforts to prevent complications well, while patients with less family support had difficulty in carrying out prevention.

As stated by Sukenty et al. (2018), factors such as body mass index (BMI), diet, and smoking also play an important role in the incidence of prediabetes. Other factors such as education level, economy, and access to health services may also influence the observed association. Therefore, a comprehensive prevention program needs to consider various interrelated factors. The results of this study corroborate that family support is an important factor in shaping health behavior. The family as the smallest unit in society has a great influence in shaping the healthy lifestyle of its members. In the context of prediabetes, family support can increase perceived benefits and reduce barriers to prevention.

CONCLUSION

Based on the results of the research that has been conducted on the relationship between family support and diabetes mellitus prevention behavior in prediabetes patients in Pasirnanjung Village, Cimanggung Health Center working area, several important conclusions can be drawn as follows:

1) Family support in prediabetes patients is mostly in the good category.

2) Diabetes mellitus prevention behavior in prediabetes patients shows that most respondents have prevention behavior in the moderate category.

3) The relationship between family support and diabetes mellitus prevention behavior shows statistically significant results, where there is a tendency that the better the family support received, the better the prevention behavior carried out by prediabetes patients.

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