Journal of Applied Holistic Nursing Science, e-ISSN 3090-1316
Vol. 1, No.3, June 2025
https://doi.org/10.70920/jahns.v1i3.184

Original Research/Systematic Review

The Relationship Between Knowledge and Family Support on Self-Management in Type 2 Diabetes Mellitus Patients at Sindangbarang Public Health Center, Bogor

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Background: *Diabetes Mellitus is a chronic disease that occurs when the pancreas does not produce enough insulin. According to the International Diabetes Federation (2021), there are 537 million adults worldwide living with Diabetes Mellitus. Self-management in DM patients cannot be adequately achieved without sufficient knowledge and family support.*

Methodology: *This study used purposive sampling with a cross-sectional approach and a quantitative design. The sample consisted of 88 respondents with Type 2 Diabetes Mellitus. Data were collected using questionnaires on Self-Management, Knowledge, and Family Support. The DKQ-24, HDFSS, and DMSQ instruments were tested for validity and reliability, with r table values > 0.388. Since the data were not normally distributed, analysis was conducted using the Spearman Rank Test Version 27.*

Research Results: *There was a significant relationship between knowledge (p-value = 0.011, r = 0.271) and family support (p-value = 0.001, r = 0.350) with self-management. This indicates that both knowledge and family support are associated with self-management among Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, Bogor, and both fall into the low category.*

Conclusion: *There is a correlation between knowledge and family support with self-management among patients at Sindangbarang Public Health Center, Bogor.*

ARTICLE HISTORY
Received : 6-3-2025
Accepted:26-5-2025

KEYWORDS
Diabetes Mellitus; Knowledge; Family Support; Self-Management

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Cite this as: Maahirah Irchamna Hartanti., Dayan Hisni., Retno Widowati (2025). *The Relationship Between Knowledge and Family Support on Self-Management in Type 2 Diabetes Mellitus Patients at Sindangbarang Public Health Center, Bogor. Journal of Applied Holistic Nursing Science*, 1(3), http://doi.org/10.70920/jahns.vli3.184

INTRODUCTION

Diabetes Mellitus is a metabolic disease characterized by chronic hyperglycemia resulting from impaired or deficient insulin secretion, impaired insulin action, or both (Sutomo & Purwanto, 2023). According to the American Diabetes Association, diabetes is classified into four main types. The first is Type 1 Diabetes Mellitus, in which damage to the pancreatic cells causes an insulin deficiency The second is Type 2 Diabetes Mellitus, characterized by impaired insulin production and resistance to insulin. Other types include genetic defects in β-cell function, genetic defects in insulin action, and diabetes induced by drugs or chemicals. Lastly, Gestational Diabetes occurs during pregnancy (Rahmasari & Wahyuni,2019).

The prevalence of Type 2 Diabetes Mellitus continues to increase each year. According to the IDF (2021), diabetes is a major global health problem. In 2021, it was reported that 537 million adults worldwide were living with diabetes. Indonesia ranked seventh among the top ten countries with the highest number of people with Type 2 Diabetes Mellitus, with approximately 10.7 million people affected (Miftach, 2022).

One of the key factors influencing self-management in individuals with Diabetes Mellitus is their level of knowledge. The higher the individual's knowledge, the better their self-management in handling their condition. Knowledge includes an understanding of Diabetes Mellitus, pharmacological effects, and therapy planning, all of which play an important role in successful self-management. In addition, motivation and self-control affect one's persistence in managing their condition. Family support, as a form of assistance from family members, also has a significant impact on the physical and psychological comfort of individuals with Diabetes Mellitus (Octaciani et al., 2023).

A previous study conducted by Octaciani et al. (2023), titled *"The Relationship Between Knowledge Level and Self-Management of Type 2 Diabetes Mellitus Patients at Bandung General Hospital, Medan, in 2022,"* showed that the chi-square test analysis resulted in a p-value < 0.05 (p = 0.000), indicating a significant influence of knowledge level on self-management. Among 20 respondents, there was a significant relationship between the level of knowledge and self-management in Type 2 Diabetes Mellitus patients. The higher the knowledge level, the better the individual's self-management. Knowledge is considered the foundation for behavior formation, so individuals with good knowledge tend to have better self-control, and vice versa. Thus, bivariate analysis showed a significant relationship between knowledge level and self-management in patients with Type 2 Diabetes Mellitus.

Another previous study by Riyadi & Muflihatin (2021), titled *"The Relationship Between Family Support and Self-Management in Type 2 Diabetes Mellitus Patients in the Working Area of Palaran Health Center, Samarinda,"* found that statistical analysis using SPSS resulted in a p-value of 0.000 < 0.05, indicating that H_0 was rejected and H_a accepted. This means there is a significant relationship between family support and self-management in Type 2 Diabetes Mellitus patients. These results can be achieved through compliance and discipline in managing dietary patterns, routinely monitoring blood glucose levels, increasing physical activity or exercise, taking medication regularly, and maintaining foot hygiene. To achieve effective self-management, support from family members is essential. The better the support received, the better the expected self-management outcomes, and vice versa.

MATERIALS AND METHOD

This study used a quantitative method with a cross-sectional approach, in which the independent and dependent variables were collected simultaneously. The research was conducted at Sindangbarang Public Health Center, Bogor, in January 2025. The population in this study consisted of Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center. The sampling technique used was purposive sampling with the following criteria: (1) Type 2 DM respondents aged ≥ 18 years, (2) able to read and write in Indonesian, (3) no physical limitations, (4) respondents who were willing but unable to read and write could be assisted by family members in completing the questionnaireWriting materials and methods can be made sub-chapters to be more detailed and regular. Writing can be like the following Research design, Population and sample research, Materials and research tools, Collection or research stages, & Data analysis. Don't forget to include ethical clearance. A total of 88 respondents were included in the study, determined using the Slovin formula.

The instruments used in this study were: the DKQ-24 (Diabetes Knowledge Questionnaire) to assess respondents' knowledge; the HDFSS (Heinsarling Diabetes Family Support Scale) to assess family support; and the DSMQ (Diabetes Self-Management Questionnaire) to measure respondents' self-management. Univariate data analysis used

descriptive statistics, including frequency, percentage, mean, standard deviation, minimum, and maximum values. Bivariate analysis was conducted using non-parametric statistical testing with the Spearman Rank test, as the data were not normally distributed. This study received ethical approval and eligibility clearance from the Research Ethics Committee of the Faculty of Health Sciences, National University, with the approval letter number 030/e-KEPK/FIKES/XII/2024.

RESULTS

The data obtained from the study conducted at Sindangbarang Public Health Center, Bogor, showed the following results:

Table 1. Frequency Distribution of Demographic Data

Variable	Frequency (f)	Percentage (%)
Age (Years)		
Adults (20-59)	41	46,6
Elderly (>60)	47	53,4
Gender		
Male	22	25
Female	66	75
Duration of DM (years)		
< 5 years	57	64,8
>5 years	31	35,2

Based on Table 1, the characteristics of the patients include demographic data such as age, gender, and duration of having Diabetes Mellitus. Most Type 2 DM patients were elderly (>60 years old), totaling 47 patients (53.4%). The majority of the patients were female, with 66 patients (75%), and most respondents had been living with Type 2 DM for less than 5 years, totaling 57 patients (64.8%).

Table 2. Descriptive Statistical Analysis

	N	*Minimum*	*Maximum*	*Mean*	*SD*
Self Management	88	22	38	31,09	4,349
Knowledge	88	20	46	35,09	7,775
Family Support	88	25	96	75,28	11,216

Based on Table 2, the average self-management score among Type 2 Diabetes Mellitus patients was 31.09, with a minimum score of 22, a maximum score of 38, and a standard deviation of 4.349. The average knowledge score was 35.09, with a minimum of 20, a maximum of 46, and a standard deviation of 7.775. The average family support score was 75.28, with a minimum of 25, a maximum of 96, and a standard deviation of 11.216.

Table 3. Relationship Between Knowledge and Self-Management in Type 2 Diabetes Mellitus Patients at Sindangbarang Public Health Center, Bogor

Score Knowledge	—	Self Management	
		P-value	Correlation Coefficinet (r)
Knowledge		0,011	0,271

Based on Table 3, the p-value obtained was 0.011 ($p < 0.05$), so Ha is accepted and Ho is rejected. This means there is a correlation between knowledge and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, Bogor. The correlation coefficient value was $r = 0.271$, indicating that the strength of the correlation between

knowledge and self-management among Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center is categorized as low.

Tabel 4. Relationship Between Support Family and Self Management Management in Type 2 Diabetes Mellitus Patients at Sindangbarang Public Health Center, Bogor

Support Family	Selft Management	
	P-value	P-value
Support Family	0,001	0,350

Based on Table 4, the p-value obtained was 0.001 ($p < 0.05$), so Ha is accepted and Ho is rejected. This indicates that there is a correlation between family support and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, Bogor. The correlation coefficient value was $r = 0.350$, which shows that the strength of the correlation between family support and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center is classified as low.

DISCUSSION

The results of this study showed that the correlation between knowledge and self-management was analyzed using the Spearman rank correlation test, yielding a p-value of 0.011, which is less than the significance level $\alpha = 0.05$. This indicates that Ha is accepted and Ho is rejected, meaning there is a significant correlation between knowledge and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, Bogor. The correlation coefficient (r) was 0.271, classified as low, indicating a weak correlation strength between knowledge and self-management among these patients. This implies that better knowledge is associated with better self-management.

These findings are consistent with the research conducted by Saqila & Muflihatin (2021) on Type II DM patients at Palaran Samarinda Public Health Center, which reported a p-value of $0.013 < \alpha$ (0.05), rejecting H0 and accepting Ha, indicating a significant relationship between knowledge and self-management with a correlation coefficient (r) of 0.326. The results also align with Mulyana et al., (2024), who studied Diabetes Mellitus patients at Situ Sumedang Public Health Center and found a p-value of 0.027 (< 0.05), concluding a significant relationship between knowledge and self-management.

Furthermore, the study found a significant correlation between family support and self-management with a Spearman rank correlation p-value of 0.001, which is less than $\alpha = 0.05$. Thus, Ha is accepted and Ho is rejected, indicating a meaningful correlation between family support and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, with a correlation coefficient (r) of 0.350. This value falls into the weak or low category, implying that stronger family support correlates with better self-management.

This result is in agreement with Nurhayati et al., (2022), who reported a significant relationship between family support and self-management in Type 2 Diabetes Mellitus patients at Sukodono Public Health Center, with a p-value of 0.05 and a correlation coefficient (r) of 0.412. Similarly, Riyadi & Muflihatin (2021) found a significant association between family support and self-management among Type II Diabetes Mellitus patients at Palaran Samarinda Public Health Center, with p-value $0.000 < \alpha$ (0.05), rejecting H0 and accepting Ha. Their findings highlight that good family support can improve adherence and discipline in managing diet, routinely monitoring blood glucose levels, increasing physical activity or exercise, regularly taking medication, and maintaining foot hygiene.

CONCLUSION

There is a significant relationship between knowledge and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, Bogor, and there is also a significant relationship between family support and self-management in Type 2 Diabetes Mellitus patients at Sindangbarang Public Health Center, Bogor.

ACKNOWLEDGEMENT

On this occasion, the researcher would like to express sincere gratitude to the Dean of the Faculty of Health Sciences at Universitas Nasional, the Head of the Nursing Study Program, the academic advisors, and the administrative staff within the Faculty of Health Sciences, especially those in the Nursing Study Program. Thanks are also extended to my parents, family, and friends who have always provided support and prayers.

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