

The role of family in improving the management of diabetes mellitus patients

Anita Lontaan^{1*}, Yulien Adam¹, Femmy Keintjem¹, Sumiyati Sumiyati²

¹Midwifery Study Program, Poltekkes Kemenkes Manado, Indonesia

²Midwifery Study Program, Poltekkes Kemenkes Tanjungkarang, Indonesia

*Corresponden: Anita Lontaan, Midwifery Study Program, Poltekkes Kemenkes Manado, Indonesia. Email: anitalontaan31@gmail.com

Received: 10 Mei 2024 ● Revised: 14 July 2024 ● Accepted: 01 August 2024

ABSTRACT

Introduction: diabetes mellitus is a chronic disease that requires long-term management involving patients and their families. The role of the family in improving the management of diabetes mellitus patients is very important to achieve good blood sugar control and prevent long-term complications. This study aims at the role of family in improving the management of diabetes mellitus patients.

Methods: this research is a quantitative method with a quasi-experimental research design with a non-equivalent control group research design with a sample size of 20 respondents

Results: shows that in the intervention group, most family roles have a good category where respondents have family roles are as many as 7 people (70%) and respondents who have poor family roles are as many as 3 people (30%). While in the control group, respondents who had poor family roles were as many as 8 people (80%) and respondents who had good family roles were as many as 2 people (20%). In the final measurement (Post-test) in the intervention group and the control group, $p = 0,028$ or $p < 0.05$ means that there are differences in family roles in both groups in the final measurement (Post-test)

Conclusions: the role of the family is very important in improving the management of diabetes mellitus patients. Family support and involvement in assisting patients in living a healthy diet, following the right medication regimen, and maintaining an active lifestyle can help achieve good blood sugar control and prevent long-term complications. Factors such as knowledge of diabetes, emotional support, and ability to manage diabetes-related situations also influence the family's role in the management of this condition. Therefore, education to families about diabetes, the psychological and practical support they provide to patients, as well as their involvement in healthy lifestyle changes are important things to note.

Keywords: diabetes mellitus; family support; role of family.



INTRODUCTION

Diabetes mellitus is a chronic disease that requires comprehensive management to control blood sugar levels and prevent long-term complications. One of the critical factors that can influence the success of diabetes management is the role of the family (Bennich *et al.*, [2020](#)). Families have great potential to provide the emotional, physical, and social support needed by people with diabetes to live a healthy lifestyle and follow the treatment recommended by medical personnel (Hellfeldt, López-Romero, and Andershed, [2019](#)). The role of the family is not only limited to providing support in blood sugar monitoring or dietary regulation but also includes understanding the importance of maintaining exercise routines, managing stress, and ensuring consistency in the consumption of prescribed medications (Powers *et al.*, [2021](#)). In addition, the family also plays a vital role in creating an environment that supports people with diabetes in avoiding risk factors that can worsen their condition, such as smoking or excessive alcohol consumption. An essential role of the family in diabetes management, a collaborative effort between patients, families, and medical teams can improve the quality of life of people with diabetes and reduce the risk of serious complications that can arise from this condition (M. Khalid Fredy Saputra *et al.*, [2023](#)). Therefore, this paper will discuss in more depth how families can play an active role in improving diabetes management through various relevant supporting and educational strategies.

Family support is vital as a support agent to ensure patients adhere to the treatment plan recommended by the medical team. They can help monitor food intake, help set exercise or physical activity schedules, and remind you to take medications on schedule. Family support can also play a role in educating patients about the importance of managing diabetes well. They can help patients understand the concept of a healthy diet and blood glucose measurement and recognize symptoms to look out for. Social support from family can also reduce stress, which can affect blood sugar control. Involving families in diabetes mellitus management strengthens the emotional connection between family members and increases the chances of effectively managing this condition (Blasco-Blasco *et al.*, [2020](#)). Respondents identified many barriers to diabetes self-care, particularly related to life situations and diabetes knowledge. Family support and education by healthcare providers were key influencers to self-care practices among Pakistani people with diabetes (Bukhsh *et al.*, [2020](#)). Resilience, defined as successful adaptation to adversity such as stigma and discrimination, requires studies relevant to the specific challenges of diabetes, whether at diagnosis or subsequently. The importance of the social context for living well with diabetes is now fully recognized, but understanding of many of the challenges, whether at home or work, is still limited, with much work needed to develop successful interventions (De Wit *et al.*, [2020](#)).

The family can help monitor and supervise the food intake, physical activity, and medication use of patients with diabetes. This can help maintain consistency in managing diabetic conditions. Emotional support for diabetes mellitus can cause stress and anxiety. Emotional support from family can help patients cope better with these stresses, improve their quality of life, and reduce the risk of psychological complications (Mphasha, Mothiba, and Skaal, [2022](#)). Family education and information can act as educational agents, providing information on diabetes management, a healthy diet, blood glucose measurements, and warning signs to look out for. This helps patients and families understand the condition better. Family motivational support can motivate patients to remain consistent in self-care, follow recommended treatments, and adopt a healthy lifestyle. The family environment can encourage the patient to undergo the necessary changes. Diabetes mellitus stress management can increase stress levels. Family support in managing stress can help reduce the risk of complications associated with chronic stress, such as fluctuations in blood sugar and high blood pressure. Involving families in diabetes mellitus management is about medical care and creating an environment that supports and motivates patients to live healthy lives (Lakerveld *et al.*, [2020](#)).

Significant impact implications: This research may aid in developing health interventions for families in diabetes management. Interventions such as family education programs or family

support integrated into medical care can be created based on the findings of this study; findings from this study can increase family awareness of their role in supporting family members with diabetes. This can lead to behavioral changes and an increased understanding of the importance of effective diabetes management. Clinical practice can be adapted to this research, such as improving collaboration between doctors, nurses, and families in designing holistic diabetes management plans. Doctors and nurses can provide more support to families in understanding and implementing necessary care. By actively involving families in diabetes management, there is potential to reduce the risk of long-term complications, such as heart disease, kidney failure, or nerve damage that often occur in poorly managed diabetic patients. Family support can improve the quality of life of patients with diabetes through better management, stable blood sugar control, and a better understanding of their condition. It can also reduce the emotional and psychological burden often associated with diabetes. Overall, the study positively impacts improving diabetes management through family involvement, which can benefit patients and the health system significantly. This study aims to examine the role of the family in improving the management of diabetes mellitus patients.

MATERIALS AND METHODS

Research designs: the research method to be carried out in this study is a quantitative method with a quasi-experimental design and a non-equivalent control group research design. The population in this study was a family with one of the family members suffering from diabetes mellitus. The sample in this study was 20 respondents, with details of 10 respondents as an experimental group and 10 as a control group. The non-probability sampling technique, combined with the purposive sampling technique, selects samples among the population according to the researcher's wants so that previously known population characteristics can represent the sample. Data collection techniques are ways to collect data related to the research to be carried out. Primary data in this study were obtained through questionnaires distributed to respondents, namely families whose family members suffered from diabetes mellitus, with the criteria of research subjects following those set by the researcher. Secondary data or second-hand data are data obtained through other parties.

The instrument validity test (questionnaire) is carried out by comparing the value of Corrected Item-Total Correlation with the value of the table r , at $df = 18$, $\alpha = 0.05$ of 0.444; if $r \geq 0.444$, it is declared valid. In contrast, if $r < 0.444$, it is declared invalid. Reliability is an index that shows the extent to which a measuring instrument can show accuracy and reliability using Cronbach's Alpha method, which analyzes the reliability of measuring instruments from one measurement, provided that if $r \text{ Alpha} \geq 0.6$, it is declared reliable. The instruments in this study are questionnaires given to families to be studied, and glucometers used to check blood sugar in patients. Data entry and data management process using computer software applications using SPSS programs. This study uses two methods to analyze data, namely univariate and bivariate data analysis and presents them in tabular and descriptive form.

RESULTS

Graph 1 Respondents' Demographic Data

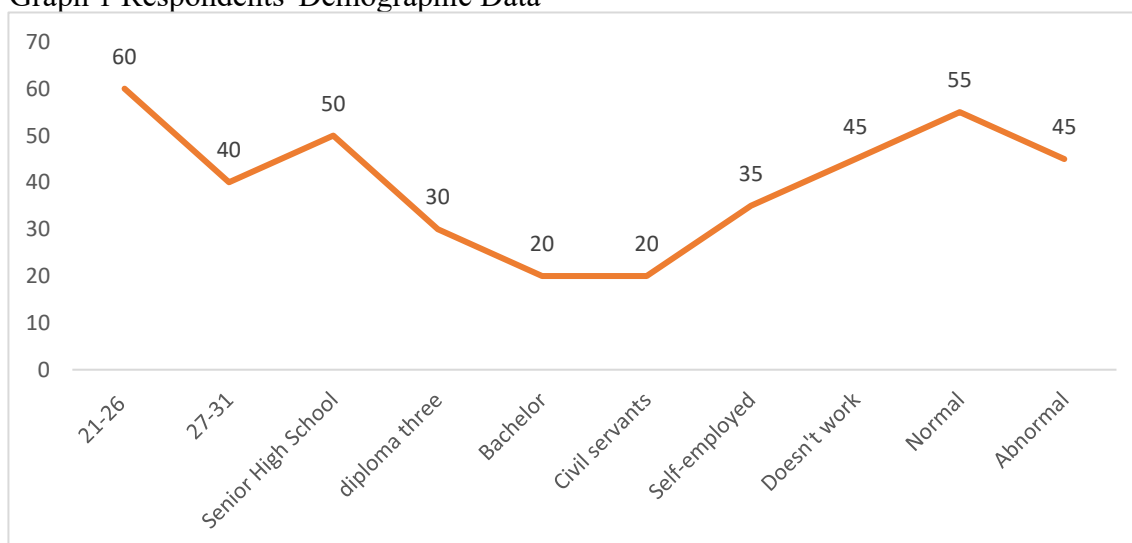


Table 1 Frequency distribution of post-test family roles in groups intervention and control groups

Role family	Post Test Interventions		Post Test Check		<i>p-value</i>
	n	%	n	%	
Not Good	3	30	8	80	0.028
Good	7	70	2	20	

Based on the results of research in Table 1 shows that in the intervention group, most family roles have a suitable category where respondents have family roles are as many as 7 people (70%) and respondents who have low-income family roles are as many as 3 people (30%). In the control group, respondents with low-income family roles were as many as 8 people (80%), and respondents with good family roles were as many as 2 (20%). In the final measurement (Post-test) in the intervention group and the control group, $p = 0,028$ or $p < 0.05$ means that there are differences in family roles in both groups in the final measurement (Post-test).

DISCUSSION

Researchers revealed that there are significant differences in the role of families in the management of people with diabetes mellitus. Supporters of family lifestyle changes can be prominent supporters in helping diabetes mellitus patients to change lifestyles to be healthier (Goff *et al.*, 2021). They can help patients choose and prepare nutritious foods and motivate them to exercise regularly. Monitoring family patients' condition can help track the patient's health condition, such as measuring blood sugar levels periodically, ensuring patients take medication regularly, and observing signs of complications that may arise (Ard, Tetey, and Feresu, 2020). Emotional support for diabetes mellitus patients often experiences stress and pressure due to their condition. Families can provide crucial emotional support, such as listening to patients' complaints, providing Motivation, and reducing stress levels affecting blood sugar control. Family education provides education to families about diabetes mellitus, including managing the patient's condition, the importance of a balanced diet, regulation of physical activity, and recognition of danger signs. It can help families become better equipped to care for and support patients (Coccaro *et al.*, 2021). The current evidence base for managing diabetes distress is summarized, and the next steps in preventing and managing diabetes distress are identified (Skinner, Joensen, and Parkin, 2020).

Awareness of complications by involving families in management, they will also be more

aware of the potential complications that can occur due to diabetes mellitus. This can encourage them to be more proactive in preventing and managing the condition (Miao Jonasson *et al.*, [2020](#)). Consultation and collaboration with the family medical team can also act as an intermediary between the patient and the medical team, assisting in scheduling consultations, understanding medical instructions, and collaborating on long-term care planning (Ferrer *et al.*, [2022](#)). Actively involving families in managing diabetes mellitus patients can significantly improve their quality of life and treatment outcomes. The importance of the family's role in diabetes mellitus management is also emphasized in a holistic care approach, where family support and involvement are considered vital in achieving optimal outcomes for patients. Families can provide much-needed emotional support for diabetic patients (Irwansyah and Kasim, [2021](#)). This includes giving encouragement, Motivation, and understanding when facing the challenges associated with diabetes conditions. Family dietary supervision can help diabetic patients by ensuring they follow a healthy diet and comply with medical recommendations (Guglielmini *et al.*, [2024](#)). This includes limiting sugar consumption, eating high-fiber foods, and maintaining a healthy weight. There is a possibility that diabetes mellitus serves as an independent risk factor for chronic kidney disease development. Early screening and monitoring of diabetes mellitus appear to be important in preventing chronic kidney disease (Tao *et al.*, [2024](#)).

Encouraging family physical activity can also help diabetic patients to stay physically active. They can invite patients to exercise together or promote physical activity appropriate to their condition. Diabetic stress management can be a significant source of stress for patients (Charlton *et al.*, [2020](#)). Families can help manage this stress through various methods such as meditation, relaxation, or listening to the patient's complaints with understanding. Family health monitoring can also ensure diabetic patients follow a regular health monitoring schedule, such as checking blood sugar levels and blood pressure and consulting with a doctor regularly (Kang and Yang, [2020](#)). Family education is essential for families to understand the condition of diabetes and how they can help patients in managing the condition. Education about healthy eating, measuring blood sugar levels, and signs of complications are also essential to give to families. Involving families in managing diabetic patients is expected to create an environment that supports and facilitates patients to achieve reasonable blood sugar control and improve their quality of life. The family can help monitor the patient's blood sugar levels regularly. They can help patients remember blood sugar measurement schedules, manage monitor result records, and provide emotional support when results are off target. Family diet arrangements can help structure and cook healthy meals according to the needs of diabetic patients. They can watch their intake of carbohydrates, fats, and sugars, as well as ensure that patients follow the diet recommended by the medical team. Family support for physical activity in encouraging patients to stay physically active is also significant. They can be friends to exercise or arrange a physical activity schedule that suits the patient's condition (Archundia Herrera *et al.*, [2021](#)).

The family's role in managing diabetes mellitus patients is vital. They provide emotional support, help manage daily meals, encourage physical activity, supervise medication, provide education and information, and monitor health conditions regularly. With active family involvement, diabetes management becomes more effective, improving patients' quality of life and reducing the risk of complications (Kim *et al.*, [2024](#)). The role of the family in improving the management of diabetes mellitus patients is vital. They provide necessary emotional support, help manage daily meals, encourage physical activity, supervise medication, provide education and information, and monitor health conditions regularly (Alfaqeeh, Alfian, and Abdulah, [2024](#)). With active family involvement, patients can more easily follow a treatment plan and a healthy lifestyle, reducing the risk of complications and improving quality of life. In managing diabetes mellitus, the family has a vital role in providing emotional support, managing daily food, encouraging physical activity, supervising treatment, providing education and information, and monitoring patient health. With active family involvement, diabetes management can be more effective and planned, helping to improve quality of life and reduce the risk of complications. The role of the family in improving the management of diabetes mellitus patients is crucial. They provide

emotional support, help manage food and physical activity, supervise medications, provide education and information, and monitor health conditions (Fernández-Ramírez *et al.*, 2023). With active family involvement, diabetes management can be more effective and planned, helping patients maintain quality of life and reduce the risk of complications.

CONCLUSIONS

It can be concluded that the role of the family is vital in improving the management of diabetes mellitus patients. Family support and involvement in assisting patients in living a healthy diet, following the proper medication regimen, and maintaining an active lifestyle can help achieve reasonable blood sugar control and prevent long-term complications. Factors such as knowledge of diabetes, emotional support, and ability to manage diabetes-related situations also influence the family's role in managing this condition. Therefore, education to families about diabetes, the psychological and practical support they provide to patients, as well as their involvement in healthy lifestyle changes are essential things to note. With increased knowledge and family involvement, better results in managing diabetes mellitus are expected, both in terms of blood sugar control and overall quality of life of patients. Collaboration between patients, families, and healthcare teams is critical to achieving optimal diabetes management goals.

REFERENCES

- Alfaqueeh, M., Alfian, S. D. and Abdullah, R. (2024) 'Factors associated with diabetes mellitus among adults: Findings from the Indonesian Family Life Survey-5', *Endocrine and Metabolic Science*, 14, p. 100161. doi: 10.1016/j.endmts.2024.100161.
- Archundia Herrera, M. C. *et al.* (2021) 'Contextually Appropriate Tools and Solutions to Facilitate Healthy Eating Identified by People with Type 2 Diabetes', *Nutrients*, 13(7), p. 2301. doi: 10.3390/nu13072301.
- Ard, D., Tetley, N.-S. And Feresu, S. (2020) 'The influence of family history of type 2 diabetes mellitus on positive health behavior changes among African Americans', *International Journal of Chronic Diseases*, 2020. doi: <https://doi.org/10.1155/2020/8016542>.
- Bennich, B. B. *et al.* (2020) 'Experience of family function, family involvement, and self-management in adult patients with type 2 diabetes: A thematic analysis', *Journal of Advanced Nursing*, 76(2), pp. 621–631. doi: 10.1111/jan.14256.
- Blasco-Blasco, M. *et al.* (2020) 'Barriers and facilitators to successful management of type 2 diabetes mellitus in Latin America and the Caribbean: A systematic review', *PLOS ONE*. They were edited by C. Ugarte-Gil, 15(9), p. e0237542. Doi: 10.1371/journal.pone.0237542.
- Bukhsh, A. *et al.* (2020) 'Type 2 Diabetes Patients' Perspectives, Experiences, and Barriers Toward Diabetes-Related Self-Care: A Qualitative Study From Pakistan', *Frontiers in Endocrinology*, 11, p. 534873. doi: 10.3389/fendo.2020.534873.
- Charlton, A. *et al.* (2020) 'Oxidative Stress and Inflammation in Renal and Cardiovascular Complications of Diabetes', *Biology*, 10(1), p. 18. doi: 10.3390/biology10010018.
- Coccaro, E. F. *et al.* (2021) 'Emotional Regulation and Diabetes Distress in Adults With Type 1 and Type 2 Diabetes', *Diabetes Care*, 44(1), pp. 20–25. doi: 10.2337/dc20-1059.
- Fernández-Ramírez, A. *et al.* (2023) 'Posttransplantation diabetes mellitus after liver transplant and the impact of family history of diabetes in a Mexican cohort', *Revista de*

Gastroenterología de México (English Edition). doi: 10.1016/j.rgmxe.2023.06.002.

- Ferrer, R. L. *et al.* (2022) 'Community Health Workers as Trust Builders and Healers: A Cohort Study in Primary Care', *The Annals of Family Medicine*, 20(5), pp. 438–445. doi: 10.1370/afm.2848.
- Goff, L. M. *et al.* (2021) 'Development of Healthy Eating and Active Lifestyles for Diabetes, a culturally tailored diabetes self-management education and support program for Black-British adults: a participatory research approach', *Diabetic Medicine*, 38(11), p. e14594. Doi: <https://doi.org/10.1111/dme.14594>.
- Guglielmini, G. *et al.* (2024) 'Gestational diabetes mellitus is associated with in vivo platelet activation and hyperreactivity', *American Journal of Obstetrics and Gynecology*. doi: 10.1016/j.ajog.2024.04.003.
- Hellfeldt, K., López-Romero, L. and Andershed, H. (2019) 'Cyberbullying and Psychological Well-being in Young Adolescence: The Potential Protective Mediation Effects of Social Support from Family, Friends, and Teachers', *International Journal of Environmental Research and Public Health*, 17(1), p. 45. doi: 10.3390/ijerph17010045.
- Irwansyah, I. and Kasim, I. S. (2021) 'Identifikasi Keterkaitan Lifestyle Dengan Risiko Diabetes Melitus', *Jurnal Ilmiah Kesehatan Sandi Husada*, 10(1), pp. 62–69. doi: 10.35816/jiskh.v10i1.511.
- Kang, Q. and Yang, C. (2020) 'Oxidative stress and diabetic retinopathy: Molecular mechanisms, pathogenetic role, and therapeutic implications', *Redox Biology*, 37, p. 101799. doi: 10.1016/j.redox.2020.101799.
- Kim, M. J. *et al.* (2024) 'Association between cardiovascular disease risk and incident type 2 diabetes mellitus in individuals with prediabetes: A retrospective cohort study', *Diabetes Research and Clinical Practice*, 208, p. 111125. doi: 10.1016/j.diabres.2024.111125.
- Lakerveld, J. *et al.* (2020) 'Motivation: the key to a healthy lifestyle in people with diabetes? Current and emerging knowledge and applications', *Diabetic Medicine*, 37(3), pp. 464–472. doi: 10.1111/dme.14228.
- Miao Jonasson, J. *et al.* (2020) 'Social Support, Social Network Size, Social Strain, Stressful Life Events, and Coronary Heart Disease in Women With Type 2 Diabetes: A Cohort Study Based on the Women's Health Initiative', *Diabetes Care*, 43(8), pp. 1759–1766. doi: 10.2337/dc19-2065.
- Mphasha, M. H., Mothiba, T. M. and Skaal, L. (2022) 'Family support in the management of diabetes patients' perspectives from Limpopo province in South Africa', *BMC Public Health*, 22(1), p. 2421. doi: 10.1186/s12889-022-14903-1.
- Powers, M. A. *et al.* (2021) 'Diabetes Self-management Education and Support in Adults with Type 2 Diabetes: A Consensus Report of the American Diabetes Association, the Association of Diabetes Care and Education Specialists, the Academy of Nutrition and Dietetics, the American Academy', *Journal of the American Association of Nurse Practitioners*, 33(12), pp. 1314–1331. doi: 10.1097/JXX.0000000000000473.
- Saputra, M. Khalid Fredy *et al.* (2023) 'Analysis of the Occurrence of Diabetic Wounds in People with Diabetes Mellitus', *Jurnal Ilmiah Kesehatan Sandi Husada*, 12(1), pp. 143–149. doi:

10.35816/jiskh.v12i1.915.

Skinner, T. C., Joensen, L. and Parkin, T. (2020) 'Twenty-five years of diabetes distress research', *Diabetic Medicine*, 37(3), pp. 393–400. doi: 10.1111/dme.14157.

Tao, P. *et al.* (2024) 'Diabetes mellitus is a risk factor for incident chronic kidney disease: A nationwide cohort study', *Heliyon*, 10(7), p. e28780. doi: 10.1016/j.heliyon.2024.e28780.

Wit De, M. *et al.* (2020) 'State of the art: understanding and integration of the social context in diabetes care', *Diabetic Medicine*, 37(3), pp. 473–482. doi: 10.1111/dme.14226.

How to cite this article. Lontaan, A. ., Adam, Y. ., Keintjem, F. . and Sumiyati, S. (2024) “The role of family in improving the management of diabetes mellitus patients”, *Jurnal Edukasi Ilmiah Kesehatan*, 2(2), pp. 33–40. doi: 10.61099/junedik.v2i2.43.