Family support behaviors among type 2 diabetes patients at 108 Military Central Hospital

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ABSTRACT

Objectives: This study aimed to assess family support behaviors among patients with type 2 diabetes at the 108 Military Central Hospital. Participants and Methods: A cross-sectional descriptive study was conducted from December 2023 to May 2024 in the Endocrinology Department of the 108 Military Central Hospital, involving 135 patients with type 2 diabetes. The Diabetes Family Behavior Checklist (DFBC) was used to evaluate family support levels. Results: Among the participants, 55.5% experienced low family support, 14.8% medium support, and 29.7% high support. Positive support behaviors, such as "Eating together," "Providing advice on timely and accurate medication use," and "Encouraging participation in physical activities," were reported as occurring "frequently" and "always" by 72.0%, 52.6%, and 52.7% of patients, respectively. Conversely, non-supportive behaviors, particularly "Nagging about blood sugar testing," were observed "frequently" and "always" by 35.6% of patients. Conclusions: Family support for patients with type 2 diabetes remains limited. Effective diabetes management requires active involvement from both the patient and their family, with the latter playing a central role. Interventions to educate and raise awareness among family members are essential to improve their engagement in supporting diabetes care, reducing complications, and enhancing the quality of life for patients.

Keywords: Family Support, Type 2 Diabetes, Diabetes Management, 108 Military Central Hospital.

INTRODUCTION

Diabetes mellitus (DM) is now a common and rapidly increasing disease worldwide. In 2018, it was estimated that the number of adults with DM worldwide was 438 million and by 2045 this number will increase to 630 million [1]. If diabetic patients do not follow and properly manage their lifestyle, exercise regimen, diet, and medication, they will soon develop and experience dangerous complications such as kidney failure, heart failure, diabetic retinopathy leading to blindness, complications in both large and small blood vessels such as myocardial infarction, stroke, and diabetic foot complications leading to amputations. The importance of social support, specifically family participation in diabetes management, has been highlighted as a decisive factor in the success of blood

sugar control treatment [2]. Social support is provided by family members, co-workers, friends, neighbors, and it has been shown to be effective in managing diabetes [3]. Family is the key factor in providing comprehensive support for diabetic patients to effectively manage outpatient treatment. For individuals with diabetes, family support is one of the main factors affecting quality of life. The family plays a central role in providing comprehensive support for the patient: material support helps maintain a stable life and organize the application of an effective lifestyle, while also providing emotional support when needed [4]. Therefore, this research was conducted with the aim of: *Survey on family support behaviors among type 2 diabetes patients at 108 Military Central Hospital.*

RESEARCH PARTICIPANTS AND METHODS

Participants: The study was conducted on type 2 diabetes patients treated at 108 Military Central Hospital.

Inclusion criteria: Patients diagnosed with type 2 diabetes undergoing inpatient treatment. Patients who agreed to participate in the study. Patients with the ability to read, listen, and comprehend.

Exclusion criteria: Patients with mental illness, speech, or hearing impairments that hinder data collection.

Study duration and location

- Time: From December 2023 to May 2024.

- Location: Department of Endocrinology, 108 Military Central Hospital.

Study design: This was a descriptive cross-sectional study.

Sample and sampling method: A complete sampling method was employed, including all eligible patients during the study period. A total of 135 patients met the inclusion criteria.

Data collection instruments and evaluation criteria

General information collection:

Demographic data (age, gender, residence) and medical history (duration of diabetes, family history, current medications) were collected through patient interviews.

Assessment of family support behaviors:

Family support behaviors were evaluated using the Diabetes Family Behavior Checklist (DFBC-II) developed by Glasgow GE (1988), comprising 16 items: 9 positive and 7 negative behaviors. The tool demonstrated high reliability with a Cronbach's alpha coefficient of 0.79. The support behaviors were scored on a Likert scale (1 = "Never" to 5 = "Always"). The total score ranged from 9–45, categorized as follows: Low support: 9–21 points; Medium support: 22–35 points; High support: 36–45 points.

Data processing and analysis: Data were double-entered into Epidata 3.1 software to ensure accuracy and analyzed using Stata 12.0 software. Results were presented in tables with frequencies and percentages.

Ethical considerations: The study adhered to ethical research standards. Participants were informed about the research objectives and voluntarily consented to participate. Confidentiality of all collected data was strictly maintained, ensuring it was used solely for research purposes. The study posed no risk to participants' health or interests.

RESULT

General characteristics

Table 1. General characteristics of patients (n = 135)

| Characteristic		n	%
Age group	21 - 39	13	9.6
	40 - 60	86	63.7
	≥ 60 years old	36	26.7
	Average: 54.2 ± 18.6 years old		
Gender	Male	74	54.8
	Female	61	45.2
Place of residence	Urban	85	63.0
	Countryside	50	37.0

The majority of patients were aged between 40 and 60 years, accounting for 63.7%, with an average age of 54.2 ± 18.6 years. The patients were predominantly male, making up 54.8%.

Table 2. Medical history of patients (n = 135)

Characteristic		n	%
Duration of diabetes	1-5 years	93	68.9
	6-10	24	17.8
	11-20	12	8.9
	> 20	6	4.4
Family history of diabetes	Yes	101	74.8
	No	34	45.2
Medications currently being used for diabetes	Oral medication	97	71.8
	Insulin injection	24	17.8
	Oral + injection	14	10.4

Up to 74.8% of patients have a family history of diabetes, mainly patients using oral medication, accounting for 71.8%.

Family support behavior

The level of support

29.7%

55.5%

14.8%

■ Low   ■ Medium   ■ High
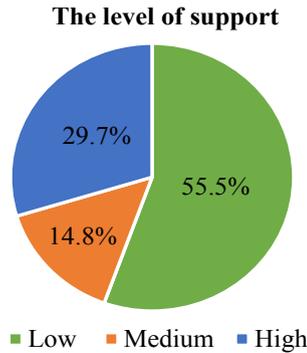
Figure 1. Family support rate for patients (n = 135)

The results revealed that low support accounted for 55.5%, medium support for 14.8%, and high support for 29.7%

Table 3. Positive support behaviors from family (n = 135)

Category	Level (n; %)				
	Never	**Rarely**	**Occasionally**	**Frequently**	**Always**
Praise adherence to diabetic diet	0 (0)	3 (2.2)	68 (50.3)	45 (33.3)	19 (14.2)
Advise taking diabetes medication on time and in the correct dosage	0 (0)	15 (11.1)	49 (36.3)	42 (31.1)	29 (21.5)
Assist in making decisions about lifestyle changes for diabetes management	5 (3.7)	2 (1.4)	110 (81.5)	10 (7.5)	8 (5.9)
Encourage participation in physical activities and exercise	0 (0)	25 (18.5)	39 (28.8)	38 (28.1)	33 (24.6)
Plan family activities suitable for self-care	3 (2.2)	9 (6.6)	78 (57.7)	27 (20.0)	18 (13.5)
Congratulate and encourage adherence to self-care activities	0 (0)	31 (22.9)	72 (53.3)	12 (8.8)	20 (15.0)
Eat together	0 (0)	4 (2.8)	34 (25.2)	68 (50.3)	29 (21.7)
Exercise together	45 (33.3)	30 (22.2)	29 (21.5)	25 (18.5)	6 (4.5)
Remind to carry sweets in case of hypoglycemia	0 (0)	36 (26.8)	79 (58.5)	12 (8.8)	8 (5.9)

The results in Table 3 indicate that the percentage of diabetic patients with family support behavior, with the highest percentage in "Eating together" is 72.0%. The percentage for "Recommending taking diabetes medication on time and in the right dose" is 52.6%, and for "Encouraging participation in physical activities" is 52.0%. The item with the highest percentage of "rarely" and "never" responses is 'Exercise together' at 55.5%

Table 4. Non-supportive behaviors from family (n = 135)

Category	Level (n; %)				
	Never	**Rarely**	**Occasionally**	**Frequently**	**Always**
Nagging about having to test blood sugar	0 (0)	37 (27.4)	50 (37.0)	30 (22.2)	18 (13.4)
Criticism for not exercising regularly	10 (7.4)	25 (18.5)	48 (35.5)	17 (12.6)	35 (26)
Nagging about diet	60 (44.5)	35 (26)	28 (20.7)	10 (7.4)	2 (1.4)
Opposing self-care activities	0 (0)	80 (59.2)	31 (22.9)	19 (14.2)	5 (3.7)
Criticized for not maintaining blood sugar levels.	3 (2.2)	50 (37.0)	42 (31.1)	25 (18.5)	15 (11.2)
Allowing late wake-ups instead of encouraging early wake-ups to eat meals on time and take medication	19 (14.1)	40 (29.6)	48 (35.5)	18 (13.4)	10 (7.4)
Allowing the consumption of foods unsuitable for diabetic patients	29 (21.8)	30 (22.2)	61 (45.1)	11 (8.1)	4 (2.8)

The results of Table 4 indicate that non-supportive behavior from family with the highest level of "Nagging about having to test blood sugar" at 35.6%.

DISCUSSION

General characteristics: The study was conducted from December 2023 to May 2024 at the Department of Endocrinology - 108 Military Central Hospital, involving 135 patients with type 2 diabetes, and it was found that: The age group of 40 to 60 years accounted for the majority at 63.7%, with an average age of 54.2 ± 18.6 years. The male-to-female ratio was 1.2:1. The majority of patients resided in urban areas, accounting for 63.0%. A duration of diabetes ranging from 1 to 5 years was observed in the majority of subjects, accounting for 68.9%. Up to 74.8% of the subjects had a family history of diabetes. Most patients were using oral medication (71.8%), while 17.8% were on insulin injections, and 10.4% were undergoing both oral and insulin treatment.

These findings align with the global trend where type 2 diabetes prevalence is higher in individuals aged 40–60 years, as supported by Cho et al., who highlighted that this age group represents a critical period for diabetes onset and progression due to lifestyle and metabolic changes [1]. Similar studies by Ramkisson et al. [2] and Fisher et al. emphasize the role of urbanization and family history as significant risk factors for diabetes [4]. However, the proportion of patients using oral medications in this study (71.8%) was slightly higher than that reported by Mayberry and Osborn, who found that a significant percentage of patients required combined treatments due to poor glycemic control. Based on these findings, public health strategies should prioritize education and prevention efforts, particularly targeting urban populations and families with a history of diabetes.

Family support behavior: The relationship between social and family support has been demonstrated in many studies on blood sugar control and HbA1C in diabetic patients. A recent study by Lu Q (2024), a longitudinal follow-up study from 2011 to 2015 on 665 diabetic patients, found that the group with social isolation had higher HbA1C and fasting blood glucose levels than the group with family and social support [5]. Our study used the DFBC questionnaire to survey the level of support from family to patients and found: low level of support accounted for 55.5%; medium level accounted for 14.8% and high level accounted for 29.7%. Family support is a very important component for diabetic patients, some factors from the family have been proven to be closely related to behavior, living habits in controlling blood sugar such as family cohesion, conflicts between members, economic conditions, sharing and encouragement [6].

The results in Table 3 indicate that the percentage of diabetic patients with family support at the levels of "frequently" and "always" in the category "Eating together" is the highest, accounting for 72.0%. A balanced diet is the foundation of diabetes management, as it directly impacts blood sugar levels. By consuming the right types of food in appropriate portions, it can help stabilize glucose levels, reduce insulin resistance, and enhance the body's response to insulin. A well-planned diet can also support weight management and reduce the risk of developing diabetes-related complications. A study by Ruhee D (2015) found that increasing the frequency of meals shared with family members helped increase the intake of vegetables, fruits, fiber, and reduce the consumption of red meat, sweets, and fast food [7]. Next is the category "Recommending taking diabetes medication on time and in the right dose," which accounted for 52.6%, and "Encouraging participation in sports activities," which accounted for 52%. The category with the highest percentage of "Rarely" and "Never" responses was "Exercising together," at 55.5%. The latest exercise guidelines from the American Diabetes Association recommend that adults with diabetes should engage in moderate-intensity aerobic exercise at least three times a week, with a duration of 150–300 minutes. A large-scale meta-analysis of 1,254 studies found that regular and consistent exercise significantly reduces HbA1C (-0.75%), fasting blood glucose (-1.8 mmol/L), and postprandial blood glucose (-3.7 mmol/L).9 A randomized controlled study by Dong C indicated that family involvement in exercise for patients with type 2 diabetes helps them manage blood sugar levels more effectively: HbA1C

decreased (0.81–1.21%); fasting blood glucose decreased (1.17 to 1.67 mmol/L); 2-hour post-meal blood glucose decreased (1.84 to 2.5 mmol/L); and LDL-Cholesterol decreased (0.38 to 0.58 mmol/L) [8].

The results of Table 4 indicate that the non-supportive support behaviors from family with frequent and always occurring behavior in the items "Need to try blood sugar control" is the highest at 35.6%. Regular blood sugar monitoring is a key factor in the successful management of diabetes. Diabetic patients need to make efforts to maintain their blood sugar levels as close to normal as possible, and if they only test their blood sugar, they will not be able to achieve this goal. Diabetic patients often experience pain and discomfort after each blood sugar test, which can lead to a fear and reluctance to monitor their blood sugar levels. A study by Ayman A (2016) found that patients with good blood sugar control (HbA1C < 7.0%) were less fearful of insulin injections and blood sugar tests compared to those with poor blood sugar control (HbA1C ≥ 7.0%) [9]. In addition, the results reveal that in the category "Allowing late wake-ups instead of encouraging early wake-ups to eat meals on time and take medication," the rate of "frequently" and "always" was 20.8%. Controlling blood sugar in people with diabetes according to the "three-legged stool" principle is "nutrition, exercise and medication". Medication plays a key supportive role in blood sugar control, and reminders and encouragement from family members to adhere to medication regimens are factors that help ensure patients take the correct dose. Mayberry (2012) observed that family members engaging in more unsupportive behaviors were associated with poorer medication adherence ($\rho = 0.44$, $p < 0.001$),

higher HbA1C levels ($\rho = 0.29$, $p = 0.03$), and poorer medication tolerance ($\rho = 0.24$, $p = 0.07$) [10].

Based on the findings, it is crucial to enhance family involvement in the management of type 2 diabetes to improve patient outcomes. Efforts should focus on educating family members about the importance of balanced nutrition, medication adherence, and regular physical activity in controlling blood sugar levels. Family-oriented interventions, such as shared meal planning and preparation, engaging in physical activities together, and creating structured reminders for medication adherence, can significantly improve diabetes management. Additionally, addressing non-supportive behaviors like criticism or neglect and promoting a positive and encouraging environment are essential to boost patients' motivation and adherence. Healthcare providers should implement structured family-centered diabetes education programs to equip families with the knowledge and skills needed to support patients effectively. Policymakers should consider integrating family-oriented approaches into national diabetes care strategies to ensure holistic and sustainable management of diabetes within the community.

The study has limitations, including its cross-sectional design, which prevents causal inferences, and its focus solely on hospitalized patients, limiting generalizability to outpatients. Self-reported data may introduce biases, and the single-center setting may not reflect broader variations in family support. Future research should include longitudinal designs, diverse populations, and objective measures like blood sugar levels to improve reliability.

Additionally, educational programs for families are recommended to enhance their supportive role in diabetes management.

CONCLUSION

The study revealed that family support for type 2 diabetic patients remains low, with 55.5% of patients receiving inadequate support. Effective diabetes management requires not only the patient's efforts but also the active involvement of family and society, with the family playing a crucial role. To enhance patient outcomes, it is essential to educate and raise awareness among family members, enabling them to support patients in managing blood sugar levels, preventing complications, and improving overall quality of life.

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