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The Relationship Between Health Service Support at Community Health Centers and Family Caregiver Coping for Patients with Type 2 Diabetes Mellitus

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ABSTRACT

Type 2 Diabetes Mellitus (T2DM) is a chronic disease that requires long-term treatment and often necessitates the assistance of family caregivers. One of the challenges faced by family caregivers in caring for T2DM patients is the psychological pressure that can affect their ability to cope with the situation. Psychological stress demands external support, particularly from Community Health Center (Puskesmas) services, which becomes crucial. This study aims to explore the relationship between Community Health Center support services and the coping mechanisms of family caregivers for T2DM patients in Malang, Indonesia. This research employs an observational design with a cross-sectional approach involving 324 family caregivers selected through cluster random sampling technique from an average of 1,787 monthly visits, using the Lamesow sample size formula from 1997. Data collection was conducted using the Health Service Support Questionnaire (HSSQ) and the Family Coping Index (FCI). Data analysis utilized the Spearman Rank test. The data analysis indicated a p-value (0.000) < α (0.05), which shows a significant relationship between health service support (Puskesmas) and the coping mechanisms of family caregivers. In conclusion, there is an important relationship between primary health service support and the coping strategies of families caring for T2DM patients. The findings of this study recommend the implementation of special programs for family caregivers of T2DM patients, aiming to improve the skills and effectiveness of home care assistance.

Keyword : Caregivers; type 2 diabetes mellitus; primary health services; coping

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INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is one of the most common metabolic disorders, caused by a combination of two main factors: impaired insulin secretion by pancreatic β-cells and the inability of tissues to properly respond to insulin. [1] Type 2 diabetes mellitus is a condition that arises due to decreased insulin secretion by the pancreas, leading to increased blood sugar levels. [2] Given its chronic nature, T2DM requires long-term treatment, emphasizing the importance of self-management to prevent complications. [3] Type 2 diabetes mellitus can lead to complications, such as cardiovascular disease, which can become severe if not promptly managed. [4] Among the various types of diabetes, 90% are caused by T2DM, characterized by impaired insulin sensitivity and secretion. [5]

The International Diabetes Federation (IDF) estimates the global prevalence of T2DM in adults (aged 20-79 years) to be 10.5%, or 536.6 million people in 2021, with projections to increase to 11.3%, or 642.7 million people by 2030. [6] In Indonesia, the prevalence of T2DM is very high, with 19,465,100 people out of a population of 179,720,500 estimated to have the condition, and it is projected to increase to 28.6 million by 2045. [7] The prevalence of T2DM in East Java Province was 875,745 patients in 2021, increasing to 929,810 in 2022. [8] According to the Health Profile data of Malang City in 2021, there were 22,086 cases of T2DM with an average of 1,840 cases per month. In 2022, the number increased to 24,984 with an average of 2,082 cases per month. Malang City stands out as one of the cities with a high incidence of T2DM, ranking second among the top 10 most prevalent diseases. [9]

The increasing prevalence of T2DM can contribute to an increase in complication rates. In Indonesia, 1,785 T2DM patients experience various complications, including neuropathy (63.5%), retinopathy (42%), nephropathy (7.3%), macrovascular issues (6%), microvascular issues (6%), and diabetic foot conditions (15%). [10] Research findings indicate that 52.5% of respondents exhibit poor adherence to self-management practicesn. [11] Type 2 Diabetes Mellitus is a condition that requires effective self-management [12], given its long treatment duration, support from family becomes crucial .[13] The complex nature of managing T2DM underscores the need for family caregiver support to enhance self-management. [14]

Individuals with T2DM often require assistance to meet their needs, typically provided by family caregivers. [15] Family caregivers bear the responsibility for healthcare, including caring for sick family members. [16] Extended caregiving can lead to caregiver burden, which manifests as psychological stress . [17] Research conducted by Alsaedi et al. [18], it was found that family caregivers of chronic patients experienced severe stress in 47 respondents (38.52%) and moderate stress in 60 respondents (49.18%). It has been observed that lower caregiver burden is associated with more adaptive coping strategies among family caregivers, while higher caregiver burden correlates with more maladaptive coping strategies. [19]

The coping mechanisms used by family caregivers serve as strategies to cope with stressors within family dynamics. [20] Family caregivers often face challenges such as lack of information, lack of skills in performing caregiving tasks, psychological factors, and physical changes in the individuals they care for. [21] As a result, family caregivers are forced to focus on managing stress and solving the problems they face, leading them to develop adaptation strategies, commonly referred to as coping mechanisms . [22] Research conducted by Rondhianto et al. [23] , it reveals that 11 family caregivers (73.30%) have never received health promotion. The study also found that the coping level of family caregivers for T2DM in family members deemed incompetent was 8 respondents (53.30%).

Positive coping strategies used by family caregivers play a crucial role in improving T2DM patient compliance and enhancing their psychological and physical health. [24] Research findings involving 41 participants indicate that positive family caregiver coping (82.9%) is associated with significant improvement in treatment motivation among T2DM patients (85.4%). As a result, family efforts emerge as a crucial factor influencing compliance in T2DM management and impacting patient treatment outcomes. [25] Factors influencing family caregiver coping include physical health, positive beliefs, problem-solving skills, social skills, social support, and material support. [26] Social support holds significant meaning within families caring for patients and plays a crucial role in the utilization of coping strategies. [27] Categorize sources of social support into three, one of which is support from others, such as doctors or healthcare professionals. [28]

Community Health Center services serve as external resources that can provide valuable support to family caregivers in effectively caring for individuals with chronic diseases. [29] Basic health services in Indonesia, known as Puskesmas (Community Health Centers), are healthcare facilities that oversee Community Health Efforts (Upaya Kesehatan Masyarakat, UKM) and Individual Health Efforts (Upaya Kesehatan Perorangan, UKP). These efforts prioritize promotive and preventive measures to improve public health in their respective operational areas. [30] Community Health Center services adhere to Minimum Service Standards (Standar Pelayanan Minimal, SPM) that include 12 indicators, including healthcare services for diabetes mellitus patients. Community Health Center services are a crucial component of national health initiatives, particularly through the Public Health Service Program (Perkesmas). [31] This program optimizes community resources to enhance community self-reliance, especially for those suffering from chronic diseases such as diabetes and hypertension, through home visits. [32] The main goal is to provide health education aimed at enhancing family caregiver independence .[33] Community Health Center services not only provide nursing care to individuals visiting health services but also extend family nursing care through home visits.

Through interviews conducted by the author with nurses and families, it was found that programs specifically designed for families or caregivers have not been optimally implemented. Findings indicate that family caregivers lack knowledge and skills in caring for individuals with T2DM at home, leading to feelings of confusion and stress, especially when dealing with patients who are reluctant to undergo regular treatment. Based on the information provided, it is clear that developing structured coping mechanisms for family caregivers is crucial. This can be achieved through healthcare support and organized learning processes facilitated by healthcare personnel, ultimately fostering adaptive family coping. This research aims to analyze the relationship between community health center support and family caregiver coping mechanisms in T2DM.

METHOD

This study utilized an analytical observational design with a cross-sectional approach. The target population consisted of all family caregivers responsible for individuals with T2DM enrolled in the Prolanis program. Based on data from the Malang City Health Office in 2022, there were 24,984 T2DM patients with an average of 2,082 new cases per month. Sample size calculation using the Lamesow 1997 formula determined a sample size of 324 family caregivers of T2DM patients. Cluster random sampling technique was employed for participant selection. Originally planned across 16 District Community Health Centers (Puskesmas) in Malang City, data collection was conducted in 14 Puskesmas as two were undergoing accreditation and could not permit data collection. Inclusion criteria for family caregivers included living with a T2DM patient, having a familial relationship (by blood, adoption, or marriage), being over 17 years old, and possessing good verbal communication skills. Conversely, exclusion criteria for family caregivers included those with communicable (e.g., tuberculosis) or non-communicable health issues (e.g., diabetes, hypertension, stroke), and caregivers aged over 60 years caring for elderly patients.

This study utilized a questionnaire consisting of a demographic data questionnaire, a Health Service Support questionnaire (HSSQ), and a Family Coping Index (FCI) questionnaire. The demographic data questionnaire covered information on age, gender, religion, highest level of education, ethnicity, occupation, monthly income, relationship with the client, duration of care, family partnership, family type, as well as family growth and development. Respondents were required to provide information on these demographic aspects. The HSSQ questionnaire was developed by the researchers based on the Prolanis guidelines. The questionnaire uses a Likert scale with four items: counseling, treatment, diagnostics, and home visits. Each of these four items contains three questions, totaling 12 questions that respondents must complete. Responses are rated on a Likert scale as follows: 5 (always), 4 (often), 3 (sometimes), 2 (rarely), and 1 (never). The questionnaire has a minimum score of 12 and a maximum score of 60. Total scores are categorized as follows: "poor" (scores 12-27), "fair" (scores 28-44), and "good" (scores 45-60).

The FCI questionnaire consists of nine components: physical independence, therapeutic competence, knowledge of health conditions, adherence to general hygiene principles, health attitudes, emotional competence, family life, physical environment, and use of community facilities. Each question in the questionnaire is scored as follows: 1 if not capable, 3 if less capable, and 5 if capable. The FCI questionnaire consists of nine questions with a minimum score of 9 and a maximum score of 45. Scores below average are considered "maladaptive," while scores at or above average are considered "adaptive." Both questionnaires have undergone validity and reliability testing with 20 respondents. The results of the validity testing for the health service support questionnaire showed the lowest correlation coefficient (r) of 0.642, while for the family coping index questionnaire, the lowest r value was 0.635. Therefore, all items in each questionnaire are considered valid. Reliability testing using Cronbach's Alpha yielded a value of 0.927 for the health service support questionnaire and 0.880 for the family coping index questionnaire. These values indicate high reliability, confirming the consistency of both questionnaires. Univariate analysis was conducted for each research variable. Descriptive analysis was used to analyze the research data and presented in the form of frequency distribution tables. Bivariate analysis employed Spearman's rank test using IBM SPSS Statistics 26 software, with a significance level of 95%.

This study obtained approval from the Faculty of Health Sciences, Universitas Brawijaya, with reference number 5036/UN10.F17.01/PT.01.04.3/2023, and ethical approval from the Health Research Ethics Committee of the Faculty of Health Sciences, Universitas Brawijaya, Malang, with reference number 4375/UN10.F17.10.4/TU/2023.

RESULTS

Table 1 presents the demographic characteristics of family caregivers. The majority of family caregivers fall within the age range of 19-44 years (adults), accounting for 60.5%. Female caregivers constitute 70.4% of the sample. The majority of caregivers (96.9%) are Muslim. Regarding educational attainment, 48.1% of caregivers completed high school (SMA). Ethnicity-wise, 95.7% of caregivers belong to the Javanese ethnicity. In terms of employment status, 38.9% of caregivers are unemployed, and 88.3% have incomes below the regional minimum wage (UMR). In terms of their relationship to the patient, 56.5% are children of the patient, and 72.8% have been caregiving for less than 5 years. The majority of caregiver families (84.3%) are nuclear families, and 54.3% of these families are in the adult stage of family growth and development.

Table 1. Demographic Characteristics of Family Caregivers (N=324)

Demographic Characteristics	f	%
Age		
10-19 years (adolescents)	3	0.9
20-44 years (adults)	196	60.5
45-59 years (pre-elderly)	125	38.6
Gender		
Male	96	29.6
Female	228	70.4
Religion		
Islam	314	96.9
Christian	6	1.9
Catholic	4	1.2
Education		
No formal education	9	2,8
Elementary School	39	12
Junior High School	45	13,9
Senior High School	156	48,1

College	75	23,1
Ethnicity		
Java	310	95.7
Madura	9	2.8
Others	5	1.5
Occupation		
Unemployment	126	38.9
Government employees	28	8.6
Laborer	94	29
Enterpriser	76	23.5
Income (Rp 3.100.000)		
>Regional minimum wage	38	11.7
<Regional minimum wage	286	88.3
Relationship with Clients		
Father/Mothrer	43	13.3
Husband/wife	124	38.3
Child	140	43.2
Sibling	17	5.2
Long Time Care		
>5 years	88	27.2
<5 years	236	72.8
Type of Family Caregiver		
Nuclear Family	273	84.3
Extended Family	51	15.7
Stages of Family Development		
Families with adolescents	80	24.7
Launching families	176	54.3
Aging families	68	21

Table 2 indicates that 55.6% of caregivers receive “good” health service support. Table 3 shows the components of health service support received by caregivers in the "good" category, in order: the component of medical support is 93.8%, the component of diagnostic support is 81.5%, and the component of home visits has the highest percentage in the "less" category at 34.6%. Table 4 shows that 62.7% of caregivers have adaptive coping, while the rest have maladaptive coping.

Table 2: Distribution of Frequency of Health Service Support Received by Family Caregivers

Health Service Support	f	%
Less	3	0.9%
Enough	141	43.5%
Good	180	55.6%

Table 3 Frequency Distribution of Health Service Support at Community Health Centers Based on Components

Variables	Less	Enough	Good

	f	%	f	%	f	%
Counseling	29	9	72	22.2	223	68.8
Medication	2	0.6	18	5.6	304	93.8
Diagnostic	3	0.9	57	17.6	264	81.5
Home Visit	112	34.6	101	31.2	111	34.3

Table 4 Frequency Distribution of Family Caregiver Coping

Family Caregiver Coping	Frekuensi (n)	Persentase (%)
Maladaptive	121	37.3%
Adaptive	203	62.7%

Table 5 shows that as the distribution of healthcare support improves, family caregiver coping becomes more adaptive, indicated by a percentage value of 73.3%. The results of the correlation test show a p-value of 0.000, which is less than 0.05, indicating a significant relationship between healthcare support and family caregiver coping.

Table 5 Results of Relationship Analysis of Support for Health Center Health Services with Family Caregiver Coping (N=324)

Health Service Support	Family Caregiver Coping						Sig= 0.000
	Maladaptive		Adaptive		Total		
	f	%	f	%	f	%	
Less	2	66.7	1	33.3	3	100	r= 0.249
Enough	71	50.4	70	49.6	141	100	
Good	48	26.7	132	73.3	180	100	

* Analysis test used Spearman's rank test with significant value 0.05

DISCUSSION

The results of the analysis in this study reveal a significant relationship between healthcare support and coping mechanisms of family caregivers of T2DM patients at Puskesmas Kota Malang. The positive correlation indicates a direct relationship, showing that as healthcare support increases, family caregiver coping tends to be more adaptive. This relationship underscores the importance of support for family caregivers in facing challenges within their families. [34] This includes support from their own family, healthcare services, and people around them. These findings align with previous research, which emphasizes that seeking information and support from family, social, and spiritual sources are common strategies used by family caregivers. [24]

Family caregivers rely heavily on support from healthcare providers as the primary health service providers for both the patients and their families. Nurses at Puskesmas play a crucial role in offering essential services such as education, counseling, treatment, diagnosis, and home visits to family caregivers of T2DM patients. [35] Visits and educational initiatives from healthcare providers contribute to alleviating the burden on families who provide care and encourage increased self-reliance within the family in caring for T2DM patients. [36] This aligns with previous research findings, which show that home visits combined with nursing care and education provided to family caregivers can significantly enhance the family's independence. [35]

Although healthcare support was categorized as "good" in this study, there were still instances of respondents exhibiting "maladaptive" coping. This observation may be related to the family caregivers' knowledge about the patient's disease, including the main symptoms, appropriate actions for T2DM patients, and potential lack of understanding regarding the reasons behind the nursing actions for T2DM patients. [37] Previous research findings state that individual knowledge significantly influences coping mechanisms when caring for ill family members. [38] Furthermore, although healthcare providers offer support in the form of information, education, and motivation, the utilization of this support may not be high, as individual decision-making plays a crucial role. [13]

The results of this study highlight an important finding where one respondent reported inadequate healthcare support, yet their coping was adaptive. This outcome may be influenced by various factors, including age, education, family partners, and family type.[39] The respondent, aged 52, has a high school education, is related to the patient (as a husband), and is part of a nuclear family. Their productive age and accumulated experience at this stage, combined with the respondent's education, likely contribute to adaptive coping, as higher education facilitates better information reception. [40] Moreover, being the husband of a T2DM patient within the context of a nuclear family allows for a closer understanding of the patient's character. [41] Support from close family members, particularly within a nuclear family, has been shown to improve the quality of life for T2DM patients. [42] These factors collectively contribute to this respondent’s adaptive coping. This aligns with previous research findings that emphasize the impact of age, education, family partners, and family type on individual coping mechanisms. [37,43]

The observed relationship between the two variables in this study is considered very weak, which may be due to internal factors related to the T2DM patients themselves. [2] During data collection, many family caregivers expressed challenges related to the difficulties T2DM patients face in adhering to treatment, leading to confusion among the caregivers. [44] The results of this study align with findings from research conducted by Chan et al. [21], which revealed that the majority of respondents face challenges in family coping, and the stress experienced by families significantly affects the adaptive responses of caregivers in fulfilling their roles within the family. Other studies emphasize that family caregivers encounter difficulties in managing T2DM patients, not only due to a lack of information and skills but also because T2DM patients may struggle to adhere to their treatment regimens. [24] This non-compliance can lead to feelings of despair among family caregivers, as their efforts to improve the health of family members may seem futile[14.]

CONCLUSION AND RECOMMENDATIONS

This study concludes that strong support provided by Puskesmas, including counseling, treatment, diagnostics, and home visits, enables family caregivers of Type 2 Diabetes Mellitus (T2DM) patients to develop adaptive coping mechanisms. Assistance from healthcare providers serves as an important coping resource for families caring for T2DM patients, addressing health issues and contributing to their overall well-being. Puskesmas is expected not only to focus on patients but also to pay more attention to the conditions of family caregivers. The establishment of programs specifically for family caregivers will help enhance their knowledge and skills, as well as provide care assistance. Home visits by healthcare staff should be conducted regularly, and if there are limitations in manpower or time, trained community health workers can be empowered. Involving healthcare professionals to support family caregivers will facilitate adaptive coping, allowing caregivers to care for T2DM patients effectively.

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