Article

Family health task implementation and the health status of diabetes mellitus patients: a correlational study

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Abstract

Introduction: Chronic conditions due to diabetes cause changes in patients' health status and their family has important roles in the health care. Therefore, this study aimed to analyze the relationship between family health task implementation and the health status of diabetics.

Design and methods: An observational analytic design with a cross-sectional approach was used, while the respondents consisted of 327 family caregivers and 327 diabetes mellitus patients. This study used both family health task implementation and Short Form Health Survey (SF-12) questionnaires.

Results: The result of the Pearson Product Moment test showed a correlation coefficient of 0.593 and a 0.000 p-value (α 0.05).

Conclusions: It was concluded that there was a fairly strong relationship between family health task implementation and the health status of diabetes mellitus patients. Nursing intervention is needed to improve the implementation of family health tasks.

Introduction

The International Diabetes Federation (IDF) estimated the global prevalence of diabetes mellitus to be 151 million in 2000, 366 million in 2011, and 415 million in 2015.[1-3] The prevalence of this disease in 2017 in adults aged 18-99 years around the world was 451 million and it is predicted to increase to 693 million in 2045.[1-3] Moreover, it was 1.5% to 2% based on a doctor's diagnosis in the population aged 15 years from 2013 to 2018 in Indonesia. The Basic Health Research 2018 results showed an increasing prevalence of diabetes mellitus from 6.9% to 8.5% based on blood tests performed in the population aged 15 years from 2013 to 2018.[4]

Diabetes Mellitus (DM) is a serious threat to the world of health today due to being a lifelong chronic disease that cannot be cured. This causes complications such as cardiovascular disease, stroke, peripheral arterial disease, neuropathy, nephropathy, and retinopathy once not controlled.[5] DM also has an impact on health status, where old age, unemployment and being single and widower had a significant association with lower Health Related Quality Of Life (HRQOL).[6] DM patients need to check their health status because it is one of the main goals in treating incurable chronic diseases. Besides, low health status and psychological problems worsen metabolic disorders, either directly through hormonal stress reactions, or indirectly through complications.[7] DM patients are dependent on other people for support, particularly their family because they experience a decrease in mental and physical function. This causes the diabetics to be unable to carry out activities independently, specifically those related to self-processing in keeping blood sugar levels stable, therefore they need support from others, especially family as the closest people they have.[8]

Family is the primary support system that provides care directly in every healthy and sick condition to its members for improvement in the health status of the sick and other persons.[9] Additionally, the health care tasks consist of knowing family health problems, making decisions to take appropriate action, providing care to the members who have health problems, modifying the environment to maintain good health, and using health facilities.[10] The family has a major role in maintaining health and helping diabetics in the care and control of diabetes mellitus, giving encouragement and motivation, and convincing patients to improve their health status to a good state by managing their disease properly.[11] A study reported the implementation of good family health care tasks in hypertensive individuals with good health status in 83 respondents (54.6%) and stated that there was a relationship between the implementation process and the patients' health status.[12] But other qualitative study found that the family habits which highly risky to increase blood glucose older people.[13] Increasing blood glucose impact on health status with worsen metabolic disorders.[7] Particularly, this study aims to analyze the relationship between family health task implementation and the health status of diabetes mellitus patients.

Significance for public health

A family is regarded as the smallest unit of the society that lives together and depends on each other. Furthermore, the members with diabetes mellitus require long-term care and the assistance of a caregiver at home. Family health task is important for diabetics considering its relation to the patients' health status and impact on morbidity, mortality, and the degree of public health. This study contains the basic data of policy created for public health services to improve public health status, specifically in diabetic patients and their families.

Design and Methods

A cross-sectional design was used, while the study population was 1,787 diabetes mellitus patients and their family caregivers obtained from Malang City Health Office. Furthermore, a cluster random sampling technique was employed and the inclusion criteria for Diabetes Mellitus Patients were people diagnosed with diabetes mellitus and being able to communicate verbally well. Family inclusion criteria were living with diabetics, minimum age 17 years old, and being able to communicate verbally well. This study was conducted in Malang City in January-February 2020. The number of subjects was 327 diabetes patients and their families, while the instrument used to measure the diabetics' health status was Short Form 12 (SF-12). Family Health Tasks were measured using a questionnaire containing 21 questions that have been tested for validity and reliability before. This instrument consisted of 5 questions about the family's health problems recognition, another 5 about the ability to decide on the right action, 5 about the ability to provide care, 2 about the ability to modify the family environment to support the healing process, and 4 concerning the ability to use health service facilities. Demographic data were also collected and the Pearson Product Moment Test results showed that the calculated r-value was 0.48 – 0.79 (> 0.44) and the Cronbach Alpha coefficient was 0.932 > 0.600. The data collection was performed at the respondent's house where questions read from the instrument were answered and filled accordingly. Ethical approval was received from the Health Ethics Committee Faculty of Medicine Universitas Brawijaya with ethical clearance number 06/EC/KEPK/01/2020 and the participants were given informed consent before participating in this study.

Results and Discussions

Table 1 shows that most caregivers aged less than 45 years old (48.3%), were Moslem (96.9%), male (51.4%), with senior high school education level (48.6%), had private jobs (57.5%), and with children (47.1%). Also, most diabetes mellitus patients aged between 45-65 years old (63.3%), were Moslem (96.9%), female (80.4%), with last education being elementary school (51.7%), did not work (68.8%), suffered for 1-5 years (48.6%) and their last blood sugar level was >125 mg/dL (86.9%).

Table 2 shows that caregivers with good family health tasks were 189 people (57.8%), while up to 138 people (42.2%) lack family health care implementation. Based on the components of family health care tasks, the best was that 65.4% family made decisions and the lowest with 57.8% modified the environment (Table 3). Based on Table 4, diabetes mellitus patients were in the category of good health status, up to 196 people (59.9%). Once viewed from the domain of health status, the best domain was social function (91.4%), while the poorest was general health (44.3%) as can be seen in Table 5. According to Table 6, the statistical test results showed a significant relationship between family health task implementation and the health status of diabetics with a 0.000 p-value (alpha 0.05).

Family health care tasks consist of knowing the health problems, as well as the ability to make decisions, demonstrate good health care, modify the environment, and access health centers. The caregiver's ability to provide health care is influenced by several factors, namely education, occupation, economic status, and distance to health services. The first domain of the family health care tasks is knowing about health problems. Additionally, the

Table 1. Characteristics of family caregivers and people with diabetes mellitus.

Demographic Characteristics	Family caregivers		People with DM	
	n	%	n	%
Age				
<45 years old	158	48.3%	7	2.1%
45-65 years old	123	37.6%	207	63.3%
>65 years old	46	14.1%	113	34.6%
Gender				
Male	168	51.4%	64	19.6%
Female	159	48.6%	263	80.4%
Last education				
No school	1	0.3%	2	0.6%
Elementary school	71	21.7%	169	51.7%
Middle School	54	16.5%	76	23.2%
Senior High school	159	48.6%	65	19.9%
Undergraduate or postgraduate	42	12.8%	15	4.6%
Profession				
Does not work	120	36.7%	225	68.8%
Labor	9	2.8%	3	0.9%
Farmers	1	0.3%	0	0%
Civil servants	7	2,1%	3	0.9%
Army / Police	2	0.6%	1	0.3%
Etc	188	57.5%	95	29.1%
Relationship with patients				
Husband and Wife	153	46.8%		
Child	154	47.1%		
Son in law	3	0.9%		
Sister	6	1.8%		
Niece	1	0.3%		
Grandchild	9	2.8%		
Mother	1	0.3%		

caregiver's education level is directly proportional to their level of knowledge and information possessed. Educational background affects a person's mindset and cognitive abilities have a role in recognizing health problems.[11] Education is a change in human beings, hence it is one of the factors influencing a person's perception to easily make decisions and act.[14] Decision-making in family health care task implementation is influenced by social and psychological factors.[15] Behavior is one of the social factors, and good behavior is caused by a person's experiences as well as physical and non-physical environmental factors.[16] Well-educated caregivers tend to provide good care to family members who have health problems.[17] Environmental modification is carried out by reducing the physical hazards existing at home to minimize health risks.[18] In theory, caregivers' ability to modify the environment is a form of emotional support that provides comfort and helps the healing process, besides it can be conducted by providing a comfortable and conducive home atmosphere.[12] The family's ability or behavior in using health facilities is influenced by education level

Table 2. Family health tasks implementation.

Family health tasks implementation	n	%
Good (score ≥75.46)	189	57.8%
Poor (score <75.46)	138	42.2%

Table 3. Domain of family health task.

Domain of family health task	Good		Poor	
	n	%	n	%
Recognizing the problem	181	55.4%	146	44.6%
Making decision	214	65.4%	113	34.6%
Provide care	207	63.3%	120	36.7%
Encironmemtal modification	138	42.2%	189	57.8%
Take advantage of the facilities health	201	61.5%	126	38.5%

Table 4. Health status category.

Health Status	n	%
Good (score ≥61.91)	196	59.9%
Poor (score <61.91)	131	40.1%

Table 5. Domain of health status of people with diabetes mellitus.

Domain	Good		Not Good	
	n	%	n	%
Physical Dimension				
Physical function	310	94.8%	17	5.2%
Physical Role	279	85.3%	48	14.7%
Body Pain	296	90.5%	31	9.5%
General perception	182	55.7%	145	43.3%
Mental Dimension				
Emotional Role	301	92%	26	8%
Vitality	230	70.3%	97	29.7%
Mental Wellness	323	98.8%	4	1.2%
Social function	321	98.2%	6	1.8

Table 6. Correlation analysis between the burden of family caregivers and the health status of DM patients.

Variable	Correlation coefficient	p-value
The family health tasks implementation	0.593**	0.000
Health Status		

because both parameters have a significant relationship.[19] Busyness and economic level also influence the use of health facilities. One of the factors that have a significant effect on health facilities usage is distance, hence people with middle economic level are not necessarily disobedient in the treatment and care program.[20]

The health status of DM patients is influenced by several factors including age, gender, education, length of suffering, and occupation.[21] As age increases, it becomes more difficult to control blood sugar levels which are increasing due to a decrease in the function of body organs, thereby affecting DM patients' health status.[22] Based on the result, the gender of the subjects used was mostly female. This is not in line with another study that states women's health status is lower compared to men, specifically in mental or psychological aspects because they are more prone to anxiety and depression once exposed to chronic diseases. Health status increases along with higher levels of education obtained by the patients, and vice versa.[23] Education is an important factor in understanding disease, DM management and blood sugar control, self-care, overcoming symptoms that arise with appropriate treatment, and preventing complications. Additionally, patients with higher education tend to develop coping mechanisms and a good understanding of information, hence they respond positively and take self-beneficial actions.

Health status consists of the Physical Health Component Scale (PCS) and the Mental Health Component Scale (MCS). The PCS has four domains, namely general health, physical function, physical role, and discomfort. The MSC also has four domains, including the role of emotions, mental health, vitality, and social functioning. Changes in physical roles caused by fatigue in diabetics are a cellular compensatory process to maintain cell function due to the impact of cellular starvation.[24] Besides, DM patients experience a decrease in the amount of physical activity due to discomfort in the form of pain or tingling that occurs. Lack of physical activity is initiated by other reasons, such as the fear of getting ulcers or wounds on the feet.[25] Mental health is a condition where individuals are free from all forms of symptoms of mental disorders.[26] Individuals with good mental health function normally in life, but their counterparts experience disturbances in mood, thinking ability, and self and emotional control. Positive self-control in dealing with various situations affect one's mental health and a person's emotions are said to be healthy once they are controllable.[27]

In this study, a significant relationship was discovered between family health care task implementation and the health status of diabetes mellitus patients. The relationship is unidirectional, indicating the better the implementation of family health care tasks, the better the diabetic's health status. A relationship was also found between the implementation of family health care tasks and the health status of hypertensive patients (p-value 0.009).[12] Families who have good abilities in carrying out health care tasks have a 12.03 times higher chance to improve health status than their counterparts. A study stated that reported family health task implementation before and after being carried out with family nursing care had a significant effect on health status with a p-value of 0.000.[28] The family role is needed to improve the health status of its members according to health care function. These include five nursing tasks, namely the ability to recognize health problems, take appropriate health action decisions, care for the members, maintain a pleasant home atmosphere and modify the environment to ensure good health, and the ability to reach health service facilities.[29] Based on a study, family and nurses provide effective health care interventions to improve health status outcomes in the elderly with memory impairment and cancer.30 It is evident that family involvement in the intervention improves patient outcomes in efficacy, specificity, and effectiveness. Families according to several studies in the field of family health have a big influence on the members' health status. Moreover, they have a role in the form of health promotion and risk reduction.[9] Once there are health problems, the majority of individuals receive more care from their families. The family is the most important source of care for sick members, which influences a health-oriented lifestyle. In this case, it prevents, corrects, causes, or ignores health problems in the members.[9] The family has a major role in maintaining all members' health and in trying to achieve the desired health status. Health problems in the family are interrelated where the family is an effective and efficient intermediary from which to seek good health status for its members. There may be some possible limita-

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tions in this study. Some respondents may have difficulty in understanding the question in SF 12 questionnaire. Having observed this problem, the researcher gave more detailed explanation to the respondents so they can understand the questions. The data generated was only from the questionnaire instrument which is based on the perception of respondents' answers. A qualitative approach is needed to strengthen conclusions because research instruments are vulnerable to respondents' perceptions that do not describe the actual situation

Conclusions

Based on the results showed, there is a relationship between family health care task implementation and the health status of diabetes mellitus patients, hence both parameters are directly proportional. Nurses need to carry out family-centered care to improve the health status of DM patients. Further study needs to analyze the factors influencing family health care tasks, as well as develop and carry out interventions to change family health tasks.

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