

DEVELOPMENT FAMILY CAREGIVER EMPOWERMENT MODEL (FCEM) TO IMPROVE FAMILY CAREGIVER CAPABILITY ON TYPE 2 DIABETES SELF-MANAGEMENT

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ABSTRACT

Empowerment of family caregiver is a preventive promotion effort in integrated management. The study aim was to develop a family caregiver empowerment model as an effort to improve family caregiver capabilities. An analytic observational study with a cross-sectional design with sample size of 250 respondents and multi-stage random sampling. The study collected used a questionnaire and data were analyzed used Structural Equation Modeling-Partial Least Squares (SEM-PLS). Family caregiver factors ($t = 4.409$; $p = 0.000$), people with Type 2 Diabetes Mellitus (T2DM) factors ($t = 3.018$; $p = 0.003$), nurse factors ($t = 4.492$; $p = 0.000$), and situational factors ($t = 8.432$; $p = 0.000$) have an indirect, positive, and significant influence on the family caregiver self-management capabilities through filial values and empowerment. Situational factors (46.6%) were the greatest influence factors on the T2DM self-management, while the smallest effect was people with T2DM

factors (1.7%). These factors together affect the filial values ($R^2 = 0.982$). The filial values will affect the empowerment ($R^2 = 0.934$), and the empowerment will affect the family caregiver capabilities on T2DM self-management of type 2 DM ($R^2 = 0.619$). The family caregiver empowerment model is a fit model with SRMR value = 0.053 < 0.80 and NFI = 0.765 < 0.90. The optimization of internal and external factors is needed to achieve the goal of family caregiver empowerment.

Keywords: Diabetes Self-Management Capabilities; Family Caregiver, Empowerment, Type 2 Diabetes Mellitus

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INTRODUCTION

The family has a vital role in Type 2 Diabetes Mellitus (T2DM) management by helping people with T2DM perform their self-management (1,2). Family involvement in diabetes management can have a positive impact on T2DM management (3,4). Family support can build strength, help make the best choices, and improve patterns in the daily lives (5), and also can reduce patient burden and improve healthy behavior in T2DM self-management (6,7). The family can act as a family caregiver to help people with T2DM manage their diseases (8). However, not all families can play a role as a family caregiver so that it can lead to failure of self-management (1,2).

The family caregiver often faces problems related to the management of diseases, which can cause physical, psychological, social, and economic burdens that have an impact on decreasing the capability to carry out health tasks (9,10). The results of previous studies in some Southeast Asian countries showed that the majority of families fail to perform diabetes management independently (11). The results of previous study showed that the family caregiver capabilities in the T2DM self-management were categorized sufficiently (48.18%), while 5% of family caregivers had the ability of independent management of DM in the poor category (12,13). The inability of families in self-management will affect the ability of self-care patients and have an impact on the health status, increased risk of disease complications (2). Other impacts are increase hospitalization and health financing (14,15), decreased quality of life (16), reduced life expectancy, and increased mortality due to diabetes (17).

The role of the family as a family caregiver must be strengthened through appropriate education strategies, providing access to needed resources, and a supportive environment (2,3). Development of family empowerment as

an effort to improve the self-management capabilities is needed as a preventive promotion effort to provide optimal results in care (18,19). Families can play an active role in self-management through empowerment so that they can help themselves and the environment (7). Empowerment of family caregivers can provide positive control, foster positive attitudes, proactively try to understand one's role as caregiver to improve caregiving abilities, support the independence of care recipients, and create constructive relationships with others (20). However, the current empowerment model is generally more focused on empowering people with T2DM. The vital role of the family in managing disease often does not get attention, which impacts the majority of families' failure to perform diabetes management independently (4). The development of the family caregiver empowerment model is expected to improve the ability of family members in T2DM self-management. The study aim was to develop a family caregiver empowerment model as an effort to improve family caregiver capabilities.

METHODS

An observational analytic study with a cross-sectional design was aimed to develop a structural model of empowering family caregivers to improve the family caregiver capabilities on T2DM self-management. Research was conducted from November 2019 - January 2020 with sample size of 250 respondents calculated using the rule of thumb formula. A multistage random sampling technique randomly selected samples with the inclusion criteria: spouse or adult child of people with T2DM, living together with people with T2DM, and having health insurance.

The variables of this study were family caregiver factors, people with T2DM factors, nurse factors, situational

factors, filial values, empowerment stages, and the family caregiver capabilities in T2DM self-management. Data were collected using a questionnaire that had been tested for validity and reliability. Sociodemographic characteristics of family caregivers were measured by a demographic questionnaire. Family caregiver knowledge about diabetes was measured by a questionnaire adapted from Spoken Knowledge in Low Literacy Patients with Diabetes (21). Family caregiver motivation was measured by a questionnaire adapted from the Motives for Caregiving Scale (22). Family caregiver coping was measured by a questionnaire adapted from the Coping Scale (23). Family caregiver spirituality was measured by a questionnaire adapted from the Spirituality Index of Well-Being (24). Family coherence was measured by a questionnaire adapted from the Sense of Coherence Scale (25), whereas family support was measured by a questionnaire adapted from the Hensarling Diabetes Family Support Scale (26).

People with T2DM factor were measured using a sociodemographic questionnaire, which contained questions about age, gender, marital status, diabetes duration, and the presence of disease complications. The nurse factor was measured by a questionnaire compiled based on the concept of the role of nurses in the coping process of family caregivers (27). The self-care ability of people with T2DM was measured by a questionnaire adapted from the Care Dependency Scale (28). Caregiving activity was measured by a questionnaire adapted from the Health Care Task Difficulty Among Caregiver Scale (29), while the role demand as a family caregiver was measured by a questionnaire adapted from the Caregiver Role Identity Scale (30).

The filial value was measured by a questionnaire adapted from the Filial Values Index Scale (31). The family caregiver empowerment stage was measured by a questionnaire adapted from the Psychological Empowerment Scale (32), while the self-management of T2DM capabilities was measured by a questionnaire adapted from the Diabetes Management Self Efficacy Scale (33). The data were analyzed using descriptive and statistical analyses; descriptive analysis was used to describe the characteristics of study variables using SPSS v16 and SmartPLS v3 for statistical analysis of structural equation modeling. This study passed the ethical review of the Health Research Ethics Commission of the Faculty of Nursing Airlangga University, and received approval from the study with protocol number 1795KEPK.

RESULTS

Characteristics of Respondents

Respondent characteristics in the study were people with type 2 diabetes, the average age of respondents was 45 years old with the majority gender being female (149/250; 59.60%). The predominant educational background was elementary school level (84/250; 33.60%) and the highest income level was less than regional minimum income (UMR) (179/250; 71.60%). In addition, the majority of respondents had marital status (221/250; 88.40%) with Madurese ethnicity highest in this study (157/250; 62.80%) (Table 1).

Characteristics of Care Giver and Empowerment Variables in the Study

The majority of respondents had knowledge in the medium category (139/250, 55.60%) the same as with motivation; it showed the value was in the medium category (165/250, 66%). The coping and family coherence of the respondents were in the medium category too (177/250, 70.80% Vs. 147/250, 58.80%), but spirituality and family support showed results in the high category (205/250, 82.00% vs. 157/250, 62.80%).

The basic value of family is the perception of family caregiver as to the basic family values that exist in itself, which are divided into three 3 sub-variables. The variables were responsibility, respecting and caring. The majority of respondents in general have a basic family value in the medium-high category (125/250; 50.00%). In addition, the majority of respondents have responsibility and caring in the high category (142/250; 42.00% vs. 131/250; 52.40%) and the reward was in the medium category (151/250; 60.40%).

The family caregiver empowerment was divided into four sub-variables, dominance of health workers, participation, challenges, and collaboration. The majority of respondents, in general, have empowerment stages in the high category (147/250; 58.80%). The perception of the dominance of health workers was in the high category (203/250; 81.20%), while the perception of participation in the majority of independent management was in the moderate category (156/250; 62.40%). Perception of challenges faced and collaboration were in the majority of independent management in the high category (155/250; 62.00% vs. 150/250; 60.00%).

Based on Table 7, it can be seen that the majority of respondents in general have the ability to manage independently in the high category (181/250; 72.40%). The majority of respondents having the ability to regulate diet, physical activity, drug management and independent blood sugar levels were in the high category (213/250, 85.20%; 219/250, 83.60%; 218/250, 87.20%; 174/250, 69.60%, respectively), while the majority of foot care was in the low category (161/250, 64.60%).

Table 1. The Characteristics of Respondents

Characteristics of Respondents	n	%
Gender		
Female	149	59.60
Male	101	40.40
Educational Background		
Elementary School	121	48.40
Junior High School	46	18.40
Senior High School	64	25.60
Bachelor	19	7.60
Income		
Under UMR	179	71.60
Upper or same with UMR	71	28.40

Marital Status		
Married	221	88.40
Single	20	8.00
Widow/ Widower	9	3.60
Ethnicity		
Javanese	91	36.40
Madurese	157	62.80
Osing	1	0.40
Others	1	0.40

Table 2. Family Caregiver Factors in Type 2 Diabetes Mellitus Sufferer

Family caregiver factors	n	%
Knowledge		
Low	20	8.00
Medium	139	55.60
High	91	36.40
Motivation		
Low	8	3.20
Medium	165	66.00
High	77	30.80
Coping		
Low	9	3.60
Medium	177	70.80
High	64	25.60
Spirituality		
Low	0	0.00
Medium	45	18.00
High	205	82.00
Family Coherence		
Low	2	0.80
Medium	147	58.80
High	101	40.40
Family Support		
Low	0	0.00
Medium	93	37.20
High	157	62.80

Table 3. The Perception of Family Caregiver in Type 2 Diabetes Mellitus Sufferer

Perception of Family Caregiver Factors	n	%
Basic value of family		
Low	0	0.00
Medium	125	50.00
High	125	50.00
Sub-Variable		
Responsibility		
Low	3	1.20
Medium	105	42.00
High	142	56.80
Reward		
Low	29	11.60
Medium	151	60.40
High	70	28.00
Caring		
Low	0	0.00
Medium	119	47.60
High	131	52.40

Table 4. The Family Caregiver Empowerment Factors in Type 2 Diabetes Mellitus Sufferer

Family Caregiver Empowerment Factors	n	%
Empowerment stage		
Low	0	0
Medium	103	41,20
High	147	58,80
Sub-Variable		
Dominance		

Low	0	0
Medium	47	18,80
High	203	81,20
Participant		
Low	9	3,60
Medium	156	62,40
High	85	34,00
Challenges		
Low	0	0
Medium	95	38,00
High	155	62,00
Collaboration		
Low	0	0
Medium	100	40,00
High	150	60,00

Table 5. The Self Care Management Factors in Type 2 Diabetes Mellitus Sufferer

Self-Care Management Factors	n	%
Independent Management		
Low	0	0.00
Medium	69	27.60
High	181	72.40
Sub variable		
Diet Regulation		
Low	0	0.00
Medium	37	14.80
High	213	85.20
Physical Exercise		
Low	0	0.00
Medium	41	16.40
High	209	83.60
Drug Management		
Low	0	0.00
Medium	32	12.80
High	218	87.20
Independent blood sugar levels		
Low	3	1.20
Medium	73	29.20
High	174	69.60
Foot care		
Low	161	64.40
Medium	37	14.80
High	52	20.80

The Hypothesis Results of the Study

Based on the outer model analysis, it was known that the loading factor value of all indicators >0.50 , thus, it can be concluded that the indicators of these variables are reliable indicators of variable measurement. The value of Average Variance Extracted (AVE) >0.5 , Cronbach's alpha >0.7 , and composite reliability >0.6 indicate that the indicators are reliable and valid.

Based on Table 8, it is known that all of the factors had a contribution and positive influence on filial values. The situational factors had the largest contribution to the filial value (61.3%; $F2 = 1.419 >0.35$). The nurse factors and family caregiver factors had a large enough contribution to the filial value (20.6%; 19%; $0.15 >F2 = 0.179 >0.35$),

while, people with T2DM factors had the smallest contribution to the filial value ($0.02 <F2 = 0.027 <0.15$), but still had a positive influence of 2.2% to the filial values. It is also known that the filial values had a positive influence and a large contribution to the empowerment stage (96.6%; $F2 = 14.126 >0.15$), and the empowerment stage had a positive and a large contribution to the T2DM self-management capability (78.7%; $F2 = 1.652 >0.15$). In addition, it is known that the structural model was fit with $SRMR = 0.570 <0.80$ and $NFI = 0.765 <0.90$.

Table 6. Result of F Square, Path Coefficient, Standardized Root Mean Square Residual (SRMR), and Normed Fit Index (NFI) Test

Variable	F Square			Path Coefficient			SRMR	NFI
	Filial value	Empowerment Stage	T2DM Self-Management Capability	Filial value	Empowerment Stage	T2DM Self-Management Capability		
Family Caregiver Factor	0.200			0.190			0.570	0.765
People with T2DM Factor	0.027			0.022				
Nurse Factor	0.179			0.206				
Situational Factor	1.419			0.613				
Filial Value		14.126			0.966			
Empowerment Stage			1.652			0.787		

Table 7. Results of Analysis of Influence Pathways Study Variables

Variable	Coefficient	T-Statistics	P-Value
Family Caregiver Factor → Filial Value	0.190	4.479	0.000
Family Caregiver Factor → Filial Value → Empowerment Stage → T2DM Self-Management Capability	0.145	4.409	0.000
People With T2DM Factor → Filial Value	0.022	3.080	0.002
People With T2DM Factor → Filial Value → Empowerment Stage → T2DM Self-Management Capability	0.017	3.018	0.003
Nurse Factor → Filial Value	0.206	4.663	0.000
Nurse Factor → Filial Value → Empowerment Stage → T2DM Self-Management Capability	0.157	4.492	0.000
Situational Factor → Filial Value	0.613	9.226	0.000
Situational Factor → Filial Value → Empowerment Stage → T2DM Self-Management Capability	0.466	8.432	0.000

Variable	Coefficient	T-Statistics	P-Value
Filial Value → Empowerment Stage	0.966	186.014	0.000
Filial Value → Empowerment Stage → T2DM Self-Management Capability	0.760	21.408	0.000
Empowerment Stage → T2DM Self-Management Capability	0.787	21.965	0.000

Based on Table 7, it is known that the family caregiver factors, people with T2DM factors, nurse factors, and situational factors had a positive and significant direct effect on the filial values (all $p < 0.05$). Family caregiver factors, people with T2DM factors, nurse factors, and situational factors also had a positive and significant indirect effect on the T2DM self-management capability through filial values and empowerment stages (all $p < 0.05$). It is also known that the filial values had effect on the empowerment stage of 96.6% ($t = 186.014$; $p = 0.000$), and indirect effect on the T2DM self-management capability by 76% through the empowerment stage ($t = 21.408$; $p = 0.000$), positively and significantly. Further, the empowerment stage had a positive and significant direct effect on the T2DM self-management capability of 78.7% ($t = 21.965$; $p = 0.000$).

The Model Development Family Caregiver Empowerment Model (FCEM)

Hypothesis testing of the influence and relationship between exogenous factors and endogenous factors was done by path analysis. The influence is significant if the t-statistic value $>$ t table = 1.651 ($\alpha = 0.05$; $n = 250$) and p-value $<$ $\alpha = 0.05$.

The development of the family caregiver empowerment model in the independent management of people with type 2 diabetes emphasizes the strengthening of basic family values that have a positive influence on

empowerment, which, in turn, can increase the ability of family caregiver in carrying out independent management of type 2 diabetes. The role of health workers in efforts to improve management Mandiri DM type 2 does not pay attention to the ability of family caregiver as the main care giver at home. Diabetes education provided is still individual sufferers and has not touched on the fulfillment of education needs to family caregivers so as to cause limited knowledge, motivation, and coping that is not optimal, which can lead to ignorance, which impacts on the inability to manage the disease. The inability of family caregivers in the independent management of type 2 DM can provide a gap in the emergence of disease complications, which can cause disability, decreased quality of life and death.

The principle of the family caregiver empowerment model in independent management of type 2 DM is to empower family members who act as family caregiver to be directly involved in the independent management of type 2 DM disease at home independently by strengthening the basic values of the family by taking into account internal factors (knowledge, motivation, coping, and family coherence) and external factors (sufferers, nurses and situational) so that the family caregiver is able to pass the stages of empowerment well (the dominance of health workers decreases, participation in disease management increases, able to face challenges in disease

management, and able to collaborate with health workers in disease management efforts), which, in turn, can

improve the ability of family caregivers in the independent management of people with type 2 diabetes.

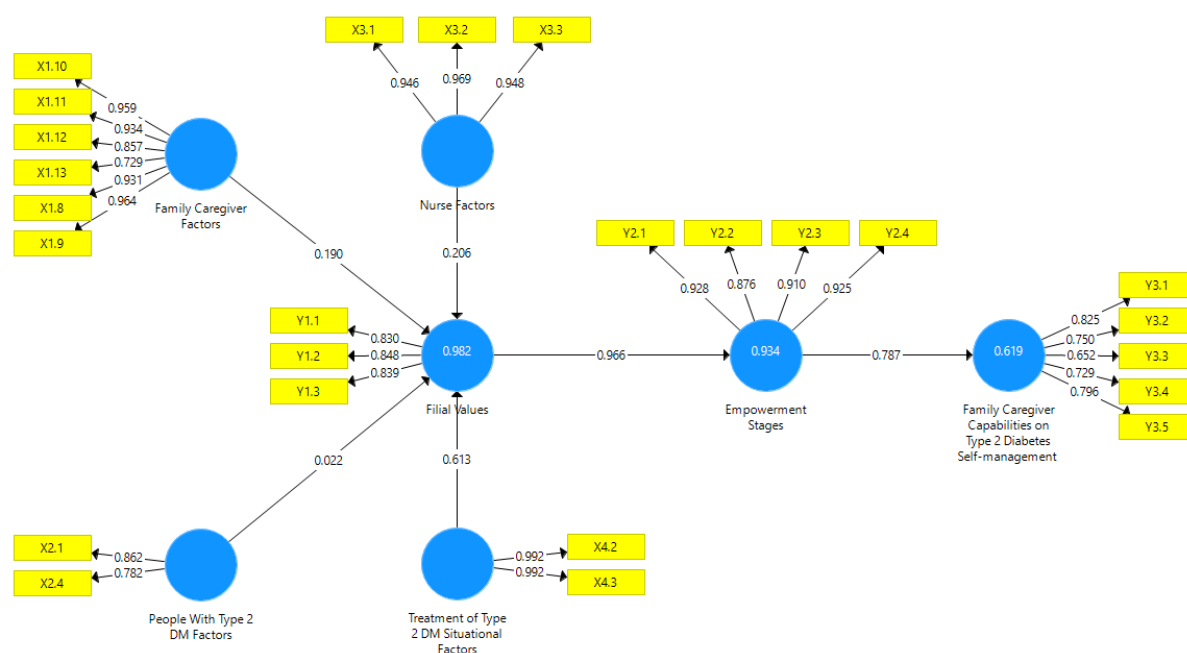


Figure 1. SEM-PLS Fit Model: Value of Loading Factor and Path Factor Coefficient

DISCUSSION

The Family Caregiver Factors Forming The Family Caregiver Empowerment Model

Sociodemographic conditions were not an indicator of family caregiver factors in the empowerment model. However, the family caregiver factors in the empowerment model were formed by the psychosocial condition. Psychosocial conditions, such as knowledge, motivation, coping, spirituality, family coherence, and family support, were valid and reliable indicators. Empowerment of family caregivers should pay attention to family caregiver background, especially psychosocial aspects. Based on the literature review, the psychosocial conditions will influence the empowerment of family caregivers (34–40). Psychosocial conditions will affect the beliefs and filial values that are associated with responsibility, respect, and care (41). Further, psychosocial conditions will also influence the strategy and mobilization of existing resources and indirectly affect the outcome of empowerment.

Knowledge is the basis for someone to take action. Limited information and a lack of understanding of the problem will lead to helplessness (39,42) The results of previous studies indicate that family caregiver knowledge will affect their capability in T2DM self-management (43). Ignorance related to the treatment process will cause excessive stress for the family caregiver, thereby reducing motivation and influencing coping and affecting empowerment. Motivation determines ability in self-care (44,45). High motivation will increase one's commitment to caring for chronically ill family members (34,44,46). The results of previous studies indicate that family caregiver motivation will affect capability in T2DM self-management (43). In addition, ineffective coping due to failure to manage stressors can have an impact on the ability of family caregivers to care for sick family members (47,48). The higher the coping skills, the higher the capability to perform T2DM self-management (43). Spirituality will affect commitment to care for sick family members (36). High

spirituality will improve coping mechanisms to be more constructive (49). The results of previous studies also showed that aspects of spirituality possessed by caregivers affect their health and welfare (Rabinowitz et al., 2009), and family caregiver capability performs T2DM self-management (43).

Family caregiver empowerment is also influenced by the family caregiver's perception of coherence and support from other family members. The perception of family coherence is related to the ability of family members to adapt to deal with stressful life events (50). Family coherence can also help support positive family caregiver assessments of parenting demands and facilitate coping effectively (48). Family social support will increase the empowerment of family caregivers (36), and affect family caregivers' capability to perform T2DM self-management (43). Family social support will reduce the negative impact and increase the positive aspects of caregiving (48). Lack of family support will reduce the caregiver resources, which causes a negative appraisal of the caregiving (48), and decreases empowerment (35,36,38,51).

People with T2DM Factors Forming the Family Caregiver Empowerment Model

People with T2DM factors in the family caregiver empowerment model were formed by age and duration of illness. Increasing the age and diabetes duration of people with T2DM, the higher the risk of disease complications can trigger physical and mental disorders that affect the inability of patients so that they need help from others (35,46). The results of previous studies show that the older the patient's age and the longer the duration of illness experienced by the patient will cause a decrease in the ability to perform activities of daily living. Decreased self-care ability will lead to an increase in the need for assistance, which contributes to an increase in burden as a family caregiver (35).

The helplessness conditions of people with T2DM cause an increase in caregiving demands, which can have an

impact on the family caregiver's appraisal (48). The results of previous studies indicate that the duration of illness is associated with increasing family caregiver burden, (52), it also has the effect of reducing the capabilities of family caregiver in carrying out care for people with diabetes (43). The family as the primary source of support for patients plays a vital role in social care and health-related care assistance (35,46,51). Social care is a treatment needed in the form of practical assistance and affective assistance in living their daily lives, whereas health-related care is related to special care provided by health workers and daily treatment carried out by family caregivers (46). The condition of patient helplessness will increase confidence and commitment to maintaining filial values, which influence the motivation of family caregivers to provide care for family members (41).

The Nurse Factor Forming the Family Caregiver Empowerment Model

Nurse factors were formed by the enabling, reinforcing, and supporting role, which had a direct influence on the filial value and an indirect effect on the T2DM self-management capability through filial values and empowerment stages. Chronic disease causes an increased need for a proper understanding of the disease and treatment to prevent complications in people with T2DM and adverse effects on themselves. Support from healthcare professionals will affect the empowerment (36,38,39,53). However, nurses must have good competencies, both clinical and communication competencies, to help clients overcome problems. Quality of nursing work-life will affect the performance of nurses in doing their work (54).

The results of previous studies indicate that increasing nurse competence through continuing education and communication across disciplines can effectively reduce burnout syndrome, to improve the quality of services provided to clients (55). Additionally, nurses must also have good emotional intelligence to increase caring behavior (56). The results of previous studies indicate that support from healthcare professionals can prevent symptoms of depression (37), and increase family caregiver ability to perform T2DM self-management (43). Support to caregivers has positive effects, such as feelings of satisfaction, love, and pride. The caregiving process makes them more durable, more patient, and more appreciative of time with family (57).

The role of nurses in empowerment includes enabling, reinforcing, and supporting so that families have appropriate coping mechanisms in disease management. Enabling is an act of facilitating families to be able to take action through the provision of adequate information about the condition of the disease and its management. Reinforcing is an act of strengthening family health promotion behavior by recognizing and increasing family competence (40,47,58). Also, a supporting role is done by providing support to families taking appropriate health promotion actions by facilitating needs, enhancing the ability of care management, showing empathy and sincere attention, and building constructive relationships (35,37,47,53). Nurses can also provide appropriate health services and access to healthcare professionals and referrals to other supporting organizations as needed.

Support from nurses is one of the resources owned by the family in dealing with problems. Nurse support can have a direct effect on empowerment outcomes in the form of a family caregiver's ability to manage the disease. The results of this study are consistent with previous study, which states that families who receive timely and adequate

assistance have shown more positive results in empowerment. Adequacy of resources will make families consider problems in caring for sufferers of chronic diseases as a challenge so that it will improve perceived health, stimulate personal growth, and promote existential wellbeing (48). Adequate resources will increase the responsibility and caregiver's care. When families can access health services promptly, and as expected, it will positively influence the results of empowerment.

The Situational Factor Forming The Family Caregiver Empowerment Model

Situational factors in the family caregiver empowerment model were formed by the caregiving activities and the role demand as a family caregiver. Situational factors, such as the self-care ability of people with T2DM, caregiving activities performed by a family caregiver, and the demands of the role of a family caregiver, can affect the empowerment of a family caregiver (48). Health problems experienced by patients with chronic diseases will have an impact on their ability to carry out their role in the treatment of their diseases. The family is the primary source of support and context in managing chronic diseases at home. The ability and willingness of family caregivers to provide appropriate care is an essential factor in independent management. (35,51).

Caregiving activities have an impact on the family caregiver empowerment (48). The type of care activity provided by the caregiver determines the caregiver's appraisal of the care process for sick family members. Patients often need help from other family members to meet their needs, both social assistance and healthcare assistance (46). The high burden of assisting impacts the negative appraisal of care and the role of being a family caregiver often demands dealing with the personal role. As such, the existence of privacy disturbances, disruptions to household and work routines, and demands for dual roles will lead to separate conflicts. Competing role demand must adequately manage to secure positive aspects of care (35,48). Failure to manage the burden on care and competing for role demand will decrease motivation and coping, which can cause decreased responsibility, respect, and care of caregivers in disease management (48). That, in turn, can cause failures in empowerment by nurses so that it causes a decrease in the ability of families to manage disease (36,53).

The Family Caregiver Empowerment Model in T2DM Self-Management

The structural model of family caregiver empowerment is formed from exogenous factors (family caregiver factors, people with T2DM factors, nurse factors, situational factors) and endogenous factors (filial values, empowerment stages, and T2DM self-management capability). The filial value is attitude and beliefs about responsibility to care for family members. Commitment to filial values, in the form of responsibility, respect, and care, will influence the motivation to provide care (41). The filial value not only affects the family caregiver's motivation, but also affects actions in caring for sick family members. Filial values can change the family caregiver's perspective on caregiving demands as a challenge, contribute to increase available resources, influence access to resources, and indirectly influence care outcomes through resources and assessment of the care process (48). A positive appraisal of the nurturing process will increase empowerment and, ultimately, improve the ability to independently manage the disease (36,48).

Chronic illness management focuses on the family, in addition to improving family health and wellbeing, it can

also to help family caregivers adapt, accommodate and use their resources to achieve welfare for sick family members (51,57). Based on previous study, it is known that, in diabetes management, the family are often unable to carry out their role as caregivers because of limited knowledge, communication, support from the surrounding environment and health workers, the presence of additional roles and concerns (59). Therefore, a family engagement strategy is needed in diabetes management to prevent acute and chronic complications, improving quality of life, and preventing early death; it can also help families prevent the adverse effects of disease management (60,61). Family caregiver empowerment by healthcare professionals through the domination stage, participation stage, challenge stage, and collaboration stage is aimed to introduce, promoting, and increasing the ability of families to meet health needs and to maintain family life (53). The process of family caregiver empowering will be beneficial to increase positive control of the mind and body, foster positive feelings, conduct care, improve caregiving abilities, support the independence of care recipients, and improve constructive relationships with others around them (36).

Empowerment has an enormous contribution, positive, and significant effect on T2DM self-management capability. The results of this study are consistent with a previous study showing that, if nurses give families a good understanding of diabetes management, the family will show behavior to help in disease management (62). Family involvement in the diabetes management can increase emotional support, develop healthy behavior, and promote diabetes self-management so that it can improve blood sugar control, decrease disease complications, improve healthy behavior and quality of life for people with T2DM (60,61,63). Failure to empower family caregivers will have an impact on the inability to manage the disease independently. The results of this study are consistent with the results of previous studies, which stated that failure of empowerment would cause an inability to detect health problems, decreased coping, and limited involvement in health planning and management. Empowerment failure also decreases desire to participate in healthcare, promotes low compliance with treatment regimens, and increased risk of non-compliance to access appropriate treatment, which will affect the declining health status of patients (36,39,53).

CONCLUSION

Development of a Family Caregiver Empowerment Model (FCEM) can improve family caregiver capability on type 2 diabetes self-management independently. The family caregiver empowerment was formed from family caregiver factors, people with T2DM factors, nurse factors and situational factors, filial value, empowerment stages, and T2DM self-management capability.

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