

Knowledge, Attitude, and Skill of Family to Treat Elderly with Diabetes Mellitus at Home through the Empowerment of Elderly Cadre in Lampung

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ABSTRACT

Diabetes is a chronic disease that often causes progressive complications in the elderly. Along with the decline in cognitive function in the elderly, it causes dependence on disciplined management of diabetes mellitus. This dependence causes a very important mentoring role to be given. The purpose of this study is to provide knowledge, attitudes, and family skills to care for the elderly with diabetes mellitus at home through the empowerment of elderly cadres in Lampung. This research method is a quasi-experimental research with a control group design with a total of 64 elderly respondents and 64 families selected by simple random sampling technique. The assessment used an instrument for assessing family abilities that the researcher developed included aspects of knowledge, attitudes, and skills. The results of the dependent t-test analysis showed a significant increase in the knowledge and skills variable in the intervention group (0.000) but decreased in the attitude variable with p 0.198. Meanwhile, the increase in value also occurred in the attitude and skill variables in the control group. So that the results of the independent t-test only showed a significant difference in the attitude score (0.000) with the highest score in the control group. So that there is no significant increase in the ability of the family after the implementation of elderly cadres empowerment.

Keywords: Elderly cadres, empowerment, family ability, Lampung

INTRODUCTION

Indonesia is ranked 4th as the country with the most diabetes mellitus sufferers in the world (World Population Review, 2020). Diabetes mellitus is responsible for 1.6 million deaths in the world (Chigom, 2018). Diabetes mellitus is also experienced by 10.9% of Indonesians who are over 15 years old (Riskesdas, 2018). The percentage of elderly patients with diabetes in 2018 was recorded as 26.8% or 14.3 also sufferers with 1.5 million additional cases each year (American Diabetes Association, 2018).

Diabetes mellitus is a chronic and progressive metabolic disease associated with the failure of the pancreas to produce adequate insulin characterized by high levels of glucose in the blood (hyperglycemia). Chronic hyperglycemia condition associated with long-term damage, dysfunction, and failure of organs in the body, generally in the eyes, kidneys, nerves, heart, and blood vessels (American Diabetes Association, 2004).

The elderly are one of the groups who are very at risk of developing diabetes mellitus. Decreased organ function in the elderly, especially the pancreas, triggers the severity of insulin retention so that they are at high risk of complications (Kirkman et al., 2012). This is what causes the elderly to be classified as vulnerable to health problems that really need social support in carrying out the care process (Stanhope & Lancaster, 2015).

Insulin retention in the elderly is associated with adiposity, sarcopenia, and physical inactivity which indirectly explains the disproportionate lifestyle in the elderly (Haslam and Cook, 2011). This condition must be balanced with the implementation of disciplined diabetes mellitus management. The American Diabetes Association (2014) describes diabetes mellitus management as actions in the form of physical activity, drug consumption, diet, monitoring blood sugar levels, and strengthening healthy coping. To carry out optimal care, disciplined treatment is needed so that it can have an impact on the ability of the elderly who tend to have high levels of elderly dependence. The presence of the family is a role that is expected to help the care process for the elderly with diabetes mellitus. The family is able to play a role in the action of preparing food, reminding them to take medicine, and most importantly how the family is able to build healthy coping for the elderly.

Cadre empowerment is one of the right interventions to help optimize the implementation of DM care at home. Cadres are able to provide graded education to families and the elderly as well as carry out sustainable health monitoring.

In addition, community nurses also contribute in providing education, motivation, and encouragement to families and the elderly (Stanhope and Lancaster, 2010). Based on these descriptions, this study aims to provide knowledge, attitudes and skills for families to care for elderly people with diabetes mellitus at home through empowering elderly cadres in Lampung.

METHOD

This research method is a quasi-experimental research with control group design. The intervention and control groups consisted of 32 elderly and 32 accompanying families, so that the total number of respondents was 64 elderly and 64 accompanying families. Respondents were determined using simple random sampling technique. The research was conducted in the working areas of the Puskesmas Natar and Puskesmas Hajimena.

The research begins with a family ability assessment (pre-test) which is conducted using a family assessment instrument covering the level of knowledge, attitudes, and family actions. The assessment instrument developed by the researcher includes questions related to aspects of knowledge (15 questions with correct (1) and false (0) answers). The attitude aspect consists of 15 questions with a Likert scale of 0-3 (0 = strongly disagree 1 = disagree 2 = agree 3 = strongly agree) and the skill aspect consists of 15 questions with answers done (1) and not done (0). The questions given are guided by 5 Family Health Tasks, namely the ability of the family to recognize health problems in the family, decide the right decision, care for the family, modify the environment according to health conditions, and utilize health facilities related to diabetes mellitus in the elderly (Susanto, 2012).

The actions that given to the intervention group were in the form of empowering cadres with a multilevel educational process. Cadres are trained to be able to empower families in carrying out diabetes care in the elderly. Community nurses as educators are tasked with providing health education to cadres regarding the description of diabetes mellitus, providing proper care, and the role of the family in helping physical and psychological care for elderly with diabetes mellitus. Elderly cadres who are members of the local community then educate, train, and participate in monitoring elderly care by families. The intervention was carried out for 2 months, the family independently cared for the elderly with diabetes mellitus from a physical and psychological perspective. In independent care, the family is given assistance by cadres in the form of visits by cadres 2 times a week and by nurses once a week.

To identify the effect of the empowerment program, data testing was carried out using bivariate dependent t-test and independent t-test analysis. This research has gone through an ethical test process with the approval of the Ethics Committee of the Poltekkes Ministry of Health Denpasar with number. LB.02.03 / EA / KEPK / 0297/2020.

RESULTS

Table 1 describes the distribution of characteristics of elderly respondents in the intervention and control groups. The average elderly in the intervention group was 64 years old, with an average length of suffering from DM for 4.78 years. Whereas in the control group the average age of the elderly respondents was 66.56 years with a long experience of DM 8.69 years.

Table 1. Characteristics of elderly respondents based on age and duration of suffering from diabetes mellitus (n = 64)

Variable	Group	Min	Max	Mean
Age	Intervention	60	85	64.4
	Control	60	87	66.56
Length of DM	Intervention	0.5	15	4.78
	Control	0.5	22	8.69

Table 2 describes the characteristics of elderly respondents based on gender, marital status, education and occupation. Elderly respondents in the intervention and control groups were dominated by women, namely 56.2% and 71.9%. Based on the marital status in the intervention group, most of the elderly were married (81.2%), with education level <SMA (78.1%), and not working (59.4%). In the control group, it was recorded that the elderly were predominantly married (68.8%), education <high school (78.1%), and not working (75%).

Table 2. Characteristics of elderly respondents based on gender, education, marital status and occupation (n=64)

Variable	Intervention		Control	
	f	%	f	%
Gender				
•Male	14	43.8	9	28.1
•Female	18	56.2	23	71.9
Marital Status				
•Married				
•Not Married	26	81.2	22	68.8
•Widow/ Widower	1 5	3.1 15.6	1 9	3.1 28.1
Education				
•< SMA	25 7	78.1 21.9	26 7	78.1 21.9

• \geq SMA				
Occupation				
•Work	13	40.6	8	25
•Not Work	19	59.4	24	75

Table 3 describes the characteristics of family respondents based on age and duration of experiencing diabetes. Family respondents in the intervention group had an average age of 55 years, with an average length of stay with the elderly, namely 32.16 years. Whereas in the control group the average family age and length of stay with the elderly were 37.72 years and 32.16 years.

Table 3. Characteristics of elderly family respondents based on age and length of stay with elderly DM (n=64)

Variable	Group	Min	Max	Mean
Age	Intervention	22	75	55
	Control	20	67	37.72
Length of DM	Intervention	6	70	32.16
	Control	1	51	23.22

Table 4 describes the characteristics of family respondents based on gender, marital status, education and occupation. Respondents in the intervention group were dominated by 68.8% women and 78.1% in the control group. Based on the marital status in the intervention group, most of the elderly were married (87.5%), with education level <SMA (56.2%), and working (65.6%). In the control group, it was recorded that families were predominantly married (81.2%), education \geq high school (78.1%), and not working (71.9%).

Table 4. Characteristics of elderly family respondents based on gender, education, marital status and occupation (n=64)

Variable	Intervention		Control	
	f	%	f	%
Gender				
•Male	22	68.8	7	21.9
•Female	10	31.2	25	78.1
Marital Status				
•Married				
•Not Married	28	87.5	26	81.2
•Widow/ Widower	1	3.1	3	9.4
	3	9.4	3	9.4

Education				
•< SMA	18	56.2	7	21.9
•≥ SMA	14	43.8	25	78.1
Occupation				
•Work	21	65.6	9	28.1
•Not Work	11	34.4	23	71.9

Table 5 describes the distribution of family ability scores in the intervention group before and after the implementation. In the knowledge variable the average family score was 70.41 and increased after implementation to 81.04. In the attitude variable, the average family score was 1.90 but decreased after the implementation to 1.89. In the skill variable the average family score was 78.54 and increased after the implementation to 91.45. The results of the dependent t-test show the value of knowledge, attitudes, and skills with p values of 0.000, 0.198, and 0.000.

Table 5. The distribution of the respondents' scores of elderly families with intervention based on knowledge, attitudes, and skills in caring for DM elderly

Variable	Mean	SD	P Value
Knowledge			
-Before	70.41	16.49	0.000
-After	81.04	8.48	
Attitudes			
-Before	1.90	9.55	0.198
-After	1.89	9.39	
Skills			
-Before	78.54	15.77	0.000
-After	91.45	16.26	

Table 6 describes the distribution of family ability scores in the control group before and after the implementation. In the knowledge variable the average family score was 81.87 and decreased after implementation to 81.66. In the attitude variable the average family score was 1.78 but increased after the implementation to 2.06. In the skill variable the average family score was 88.12 and increased after implementation to 88.75. The results of the dependent t-test showed the value of knowledge, attitudes, and skills with p values of 0.916, 0.000, and 0.812.

Table 6. The distribution of the control scores of elderly family respondents based on knowledge, attitudes, and skills in caring for DM elderly

Variable	Mean	SD	P Value
Knowledge			
-Before	81.87	6.60	0.916
-After	81.66	7.94	
Attitudes			
- Before	1.78	5.92	0.000
- After	2.06	23.48	
Skills			
- Before	88.12	7.71	0.812
- After	88.75	9.93	

Table 7 describes the comparison of family ability values after implementation between the intervention and control groups. In the knowledge variable the mean value in the control group was higher, namely 81.66 with a p value of 0.762. In the attitude variable the mean value in the control group was higher, namely 2.06 with a p value of 0.000. In the skill variable the mean value in the intervention group was higher, namely 91.45 with a p value of 0.812.

Table 7. Distribution of differences in ability scores of elderly families after the intervention in the intervention and control groups

Variable	Mean	SD	P Value
Knowledge (post)			
-Intervention	81.04	8.48	0.762
-Control	81.66	7.94	
Attitudes (post)			
-Intervention	1.89	9.39	0.000
-Control	2.06	23.48	
Skills			
-Intervention	91.45	16.26	0.812
-Control	88.75	9.93	

DISCUSSION

Based on the results of the distribution analysis of elderly respondents, it is known that the elderly are in the range of 60-87 years. The high number of people with diabetes mellitus at the age above 60 years also occurred in Roifah's study (2017), with a total of 55 people (55%) in patients with the elderly category (60 - 74 years). The emergence of diabetes

mellitus in the elderly is very at risk of experiencing complications due to decreased organ function in the elderly. Physiologically, decreased organ function can occur in the endocrine system, the function of pancreatic beta cells in producing the hormone insulin. Insulin retention in the elderly can also occur due to adiposity, sarcopenia, and physical inactivity (Haslam and Cook, 2011) as well as a 35% decrease in mitochondrial activity in muscle cells which results in an increase in muscle fat levels by 30% (Trisnawati, Widarsa and Suastika, 2013).

The length of time the elderly have diabetes also affects the ability of the elderly to manage DM. In both groups, the average duration of diabetes experienced by the elderly was 4.78 and 8.69 years. Research by Wahyuni, Nursiswati and Anna (2014) states that DM sufferers with a duration of ≥ 10 years tend to be more able to perform DM treatment independently. This is because the elderly are more experienced and have more positive coping management when compared to patients with DM < 10 years. The longer someone experiences something, the longer the opportunity for someone to learn and overcome the problems experienced. So that strengthening education and assistance to the elderly is very important.

Marital status and work in the intervention and control groups tended to be the same, namely dominated by elderly with married status, educational status, namely $<$ high school, and work. Individuals with low educational status tend to experience cognitive decline in old age. Research by Manurung, Karema and Maja (2016) explains that the highest level of education has decreased cognitive function in the elderly who only graduated from elementary school (33.3%).

Characteristics of elderly companion families involved in this study were 55 years old in the intervention group and 37.72 years in the control group. The average age of the elderly companion family in the intervention group is in the productive age range (15 - 64 years) (BPS, 2019). Someone in the productive age range is easier in the process of receiving information and carrying out actions. Family education status in the intervention group was dominated by high school graduates, while in the control group, it was \geq SMA. This condition tends to make it easier for families in the control group to develop more.

Based on the results of the analysis on the value of the intervention family's ability, the value of the knowledge and skills variable had a significant increase in p value of 0.000. Meanwhile, the attitude variable experienced an insignificant decrease with a difference of

0.01 and a p value of 0.198. In the control group, it was found that there was an increase in the attitude and skill variables, but a significant increase only occurred in the attitude variable p value 0.000. While the knowledge variable experienced an insignificant decrease of 0.21 (p value 0.916).

There was an increase in knowledge and skills variables in the intervention group related to the action of implementing diabetes management by families through the empowerment of cadres.

Empowerment of elderly cadres can motivate the community to carry out health care independently. Health cadres are local people who are selected based on their abilities and responsibilities in carrying out health monitoring and counseling tasks as well as mobilizing the community in a healthy life (Sumarmi, 2015).

In this case, before the elderly cadres carry out their duties to the family and the elderly, the cadres have gone through training related to diabetes mellitus management provided by nurses. After going through this process, cadres provide training to families on the proper care process for elderly people with diabetes mellitus. Abel (2015) also states that mentoring by licensed nurses shows more positive effects on patients. The quality possessed by nurses and cadres will affect the process of receiving education by the family. Health education is not only intended to increase knowledge, attitudes and health practices, but also to improve the physical and non-physical environment in order to maintain and improve the health of the elderly (Nies and McEwen, 2015).

An increase in the quality of cadres also occurred in the research of Wirawati and Prasetyorini (2016), the increase in cadres' skill in carrying out community services increased after being given training. This certainly affects the process of receiving information by elderly families. Posyandu cadres act as health motivators, health educators and health service providers through Posyandu. In fostering community interest and potential in implementing clean and healthy living behavior, motivation from cadres is needed to improve family and community health, the ability to identify health service needs and barriers, and understand the available resources (Susanto, Claramita and Handayani, 2017). Through training for families by cadres, families can be involved in monitoring blood sugar regularly, supervising food, reminding the consumption of drugs, motivating the elderly to exercise, and creating a safe home environment to prevent complications in the elderly with DM. This role is very important for the health of the elderly considering the

cognitive decline in the elderly (Manurung, Karema and Maja, 2016) which often causes the elderly to experience senility and difficulty remembering which food or medicine to consume.

The test results between groups showed a significant difference in the attitude variable of 0.000 with the largest value in the control group, while for the knowledge variable the value in the control group was greater, and for the skill variable the value of the intervention group was greater. This shows that the increase and decrease in value can occur in both the intervention and control groups. There are no results that explicitly show a significant increase in value occurred in the intervention group. This is related to the level of family education in the intervention group $< \text{SHS}$ while in the control group $\geq \text{SHS}$. Research by Yacoub, Miranti and Herkulana (2016) explains that employees with a high level of education tend to have good work abilities. With the status of a family who has education above high school, the ability of the family to receive information and to find out more information will certainly be easy. This condition causes an increase in the value of several variables in the control group even though they do not get DM care treatment by families through cadre empowerment.

CONCLUSION AND RECOMENDATION

The results of the study did not explicitly indicate a higher family ability value in the intervention group as the group that received training. Although it did not show a higher post-test score than the control group, the knowledge and skills variables in the intervention group experienced a significant increase between the scores before and after the intervention. The increase in scores in the control group even though they did not receive training interventions, could occur due to the characteristics of families with a higher level of education so that families have the ability to independently access health education.

It is hope that the cadre empowerment intervention as a facility in helping families care for the elderly with DM can be studied more deeply by paying more attention to the characteristics of the respondent.

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