FAMILY ROLES AND BLOOD GLUCOSE MANAGEMENT   IN PATIENTS WITH TYPE 2 DIABETES MELLITUS AT BANDAR LAMPUNG, INDONESIA

Eka Yudha Chrisanto[1], Yoko Saputra[2], Bahjatun Nadrati[3]

[1]Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
[2]Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
[3]Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

ABSTRACT

Background: Diabetes Mellitus ranks 8th out of 10 major diseases in Lampung province with a prevalence of 0.4%. Based on Rikesdas Lampung Province results in 2013 it is known that DM pavelence reaches 0.7% with pravelensi in Bandar Lampung reaches 0.8% and for Public Health Services (*Puskesmas*) Panjang in 2017 cases of DM was found as much as 2145.
Purpose: Knowing that the relation family roles and blood glucose management in patients with type 2 Diabetes Mellitus at Bandar Lampung, Indonesia
Methods: This was quantitative research type with analytical survey design and cross sectional approach. Population in this research were all patient of Diabetes Mellitus (DM) Type 2 in April 2018, at *Puskesmas* Panjang Bandar Lampung and the samples were 79 respondents given of questioner. The statistical test used is Chi Square test.
Results: The frequency distribution of respondents aged between 60-69 years 54 (68.4%) respondents, female of 54 (68.4%) respondents, primary elementary education (45.6%) respondents, Duration of DM ≥ 5 years of 42 (53.2%) respondents, uncontrol blood sugar as many as 53 respondents (67.1%), poor family roles as many as 42 (53.2%) respondents, with *p*-value 0,000.
Conclusion: There the relation of family roles and blood glucose management in patients with type 2 Diabetes Mellitus at Bandar Lampung, Indonesia
Suggestions: The management of Public Health Centre (*Puskesmas*) to give counseling to the family about the importance of family roles and blood glucose management in patients with type 2 Diabetes Mellitus

Keywords: Family Roles, Blood Glucose Management, Type 2 Diabetes Mellitus

INTRODUCTION

Diabetes Mellitus (DM) is a syndrome characterized by an increase in blood glucose levels caused by abnormalities in beta cells on the islet of the pancreatic gland Langerhans. In type 2 DM blood glucose levels increase due to insulin resistance due to wrong lifestyle (Soegondo, Soewondo & Subekti, 2009). According to the American Diabetes Association (ADA) in 2010, DM is a group of metabolic diseases with characteristic hyperglycemia that occurs due to abnormalities in insulin secretion, insulin action or both (Indonesian Endocrinology Association, 2015).Data from the International Diabetes Federation (IDF) shows that there were 382 million people living with diabetes in the world in 2013. By 2035 that number is expected to increase to 592 million people. It is estimated that of the 382 million people, 175 million of them have not been diagnosed, so that they are threatened to progressively develop into unconscious and uncomplicated complications (Ministry of Health of the Republic of Indonesia, 2017).

Based on the Basic Health Research in 2007 which only examined the population in urban areas, got among the respondents whose blood sugar was examined 5.7% had diabetes mellitus, of which only 26.3% had been diagnosed previously and 73.7% had been diagnosed. not diagnosed before. Whereas in Riskesdas 2013 out of 6.9% of patients with diabetes mellitus obtained, 30.4% had been previously diagnosed and 69.6%

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

were not previously diagnosed. Despite an increase in the proportion of people with diabetes mellitus who are diagnosed, the proportion that has not been diagnosed previously is still large (Ministry of Health of the Republic of Indonesia, 2017).

The prevalence of DM sufferers in 2013 increased with age to the highest in the 55-64 years age group and then slightly decreased in the later age groups. The prevalence of DM by sex was found in women (7.70%) higher than men (5.50%), according to the level of education the highest DM prevalence was in the non-school group (10.40%) and did not complete elementary school (8 , 70%). In terms of work, the prevalence of DM is higher in the group of housewives (9.30%) and not working (7.40%) followed by employees and entrepreneurs (7.20%) respectively. Based on the level of per capita household expenditure, the prevalence of DM increases according to the level of expenditure (Republic of Indonesia Ministry of Health, 2017).

In Lampung Province based on data on disease patterns of puskesmas and hospital patients of various age levels, the number of DM cases ranks 8th out of the 10 largest diseases in Lampung Province with a prevalence of 4% (Lampung Provincial Health Office, 2013). Based on the results of Riskesdas Lampung Province in 2013 it was known that the prevalence of DM reached 0.7% with the prevalence in Bandar Lampung City reaching 0.8%. And for the Long Puskesmas in 2017 there were 2145 DM cases.

There are four pillars of DM management including education, medical nutrition therapy, physical exercise, and pharmacological therapy. Management of DM begins with education to change the lifestyle and behavior of patients. Education provided includes an understanding of the course of DM disease, the importance of DM control and monitoring, complications and risks, pharmacological and non-pharmacological therapies and treatment targets, etc. (Indonesian Endocrinology Association, 2015).

Efforts are made to prevent microvascular and macrovascular complications by controlling blood glucose levels within the normal range. This is in accordance with the recommendation of The American Diabetes Association (ADA) that all individuals with diabetes mellitus should try to reach blood glucose levels close to normal. Efforts made to control blood sugar levels in the normal range are influenced by various factors, including the level of knowledge, socioeconomic and service facilities available including patient self-care at home (Fatimah, 2015).

The American Diabetes Association, said that diabetes management planning should be discussed as therapeutic between patients and their families. Patients must receive medical care in a coordinated and integrated manner from the health team, so that the family realizes the importance of participation in the care of people with diabetes mellitus so that the patient's blood sugar levels can be controlled properly.

Healthy and sick are influenced by culture, family, social economy and environment. The influence of the family on health and illness is related to the role and function of the family The family plays a very significant role in the lives of other families, especially the health status of the sick (Yeni & Handayani, 2013). Family roles consist of formal and informal roles. In the informal role of the family there is the role of caring for the family and the role of motivating / encouraging family (Friedman, 2010; Putri, 2013). Where is the duty of each family member to care for other family members who are sick as the main function of the family as a care to meet the needs, care and care of family members who are sick and meet their needs (Asmadi, 2008).

The family is the main support system that provides direct care in every healthy and sick condition. Family patients have the ability to overcome problems will be able to suppress maladaptive behavior (secondary prevention) and restore adaptive behavior (tertiary prevention) so that the health status of patients and families can be optimally improved (Ali, 2010). The role of the family includes recognizing family health problems, making decisions to take appropriate actions, providing care for sick family members, maintaining a healthy home atmosphere, and using health care facilities in the community (Efendi, 2009). Diabetes mellitus if not handled properly will cause complications in various organs of the body such as the eyes, kidneys, heart, leg veins, nerves and others. therefore before further complications occur, then treatment and management in patients with diabetes mellitus must be done. The role of

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

the family is needed to achieve maximum health, to achieve the goal of healthy living the participation of patients and families in managing the management of blood sugar levels is very important so that the patient's blood sugar is controlled (Tandra, 2017).

The family as a group can cause, prevent, ignore or fix the family's own health problems, almost every health problem from the beginning to the settlement will be influenced by the family. The family has a major role in the health care of all family members and not the individual himself who strives to achieve the desired level of health (Friedman, 2010). The family is a major role in maintaining health and helping patients in the care and control of diabetes mellitus, encouraging and motivating patients, to continue their lives, convincing patients that they are also an important, needed and chilling part of the family, ensuring that many people are able to control their levels blood sugar then performs normal activities (Nuraenah, Mustikasari, & Putri, 2014). The American Diabetes Association says that the planning of diabetes mellitus management must be carried out jointly between patients and families so that blood sugar levels can be controlled. In the care of patients with

diabetes mellitus the role of the family in managing family members is needed (Soegondo, Soewondo, & Subekti, 2009). There is a significant relationship between the role of family relationships with blood sugar levels in patients with diabetes mellitus (p <0.05) (Putri, Yenia, & Handayani 2013). There is a relationship between aspects of diabetes foot care with the incidence of diabetic foot ulcers in patients with Diabetes Mellitus, namely the majority of respondents who did not do foot care with p-value = 0,000 and OR = 10.833 (Dewi, 2016).

The survey results conducted by researchers in February 2018 at the Panjang Public Health Centre showed that 20 DM sufferers who performed routine control as many as 7 people (35%) were accompanied by their families, while 13 people (65%) were not accompanied by their families.

RESEARCH METHODS

Quantitative research type with a population of all patients with Diabetes Mellitus (DM) Type 2 months, at the Puskesmas Panjang Kota Bandar Lampung amounted to 374 people (the number of people with DM last three months December 2017-February 2018). Determination of the sample size of the researcher using the Slovin formula.

RESEARCH RESULTS

Table 1. Frequency Distribution of Family Roles N = 79

Family Roles	Frequency	Percentage (%)
Good	37	46.8
Poor	42	53.2
Total	79	100.0

Based on table 1 it is known that the majority of respondents with unfavorable family roles were 42 respondents (53.2%), while good family roles were 37 respondents (46.8%).

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

Table 2. Distribution of Frequency of Blood Glucose Management N=79

Blood Glucose Management	Frequency	Percentage (%)
Blood Glucose Levels Under Control	26	32.9
Blood Glucose Levels Uncontrol	53	67.1
Total	79	100.0

Based on Table 2 it is known that the majority of respondents with blood sugar control are poor ie as many as 53 respondents (67.1%), while controlling good blood sugar by 26 respondents (32.9%).

Bivariate Analysis

Having known the characteristics of each variable can be continued further analysis. If desired analysis of the relationship between the two variables. Then the analysis continues at the bivariate level. To find out the relationship between the two variables is usually a statistical test. The type of statistical test used is very dependent on the type of data or the variable being connected. In this study the statistical test used was the test *Chi Square.*

Table 3. Relationship of Family Roles With Blood Glucose Management

Family Roles	Blood Glucose Management				Total N	p-Value	OR (CI 95%)
	Blood Glucose Levels Under Control		Blood Glucose Levels Uncontrol				
	n	%	n	%			
Good	20	54.1	17	45.9	37	0.000	7,06 (2,4-20,8)
Poor	6	14.3	36	85.7	42		
Total	26	32.9	53	67.1	79		

The results found that of 37 respondents with good family roles, as many as 20 people (54.1%) control good blood sugar levels and 17 people (45.9%) control blood sugar levels poorly. While of 42 respondents with a bad family role, as many as 6 people (14.3%) control good blood sugar levels and 36 people (85.7%) control blood sugar levels are poor.test results *Chi square* obtained *p value of* 0,000, meaning smaller than the alpha value (0,000 <0.05). Thus it can be concluded statistically with a degree of confidence of 95%, it is believed that there is a relationship between the role of the family and controlling blood sugar levels in patients with Type 2 Diabetes Mellitus at the Bandar Lampung City Health Centre in 2018. While the OR test results obtained a value of 7.06 (95% CI 2,4-

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

20,8), it means that respondents with good family roles have a 7.06 times greater risk of controlling good blood sugar levels compared to poor family roles.

DISCUSSION

The results of the study showed that the majority of respondents aged between 60-69 years were 54 respondents (68.4%), while those aged 70-79 years were 25 respondents (31.6%). The results of this study are consistent with the theory that aging is an important risk factor for diabetes mellitus. In all epidemiological studies in various populations, the prevalence of Diabetes Mellitus shows a very specific increase according to age (Wicaksono, 2011). The theory states that age is a factor in adults, with increasing age the ability of tissues to take blood glucose decreases. This disease is more common in people over the age of 40 than in people who are easier (Alfiyah, 2010).

The Relationship Between Age and Diet with Incidence of Type 2 Diabetes Mellitus in Outpatients in the Work Area of Tenga Health Centre, Tenga District, which shows respondents in the age category ≥ 45 years with Type 2 Diabetes Mellitus as many as 81 (73.6%) with a case group of 46 (41.8%) respondents and control groups 35 (31.8%) respondents. The results of the statistical test show a probability value *(p-value)* of 0.017 with an error rate of 0.05 (*p-value* <0.05) and processing an *odd ratio* (OR) of 0.342 with a *confidence interval* (CI) of 0.139-0.843. The analysis shows that there is a relationship between age and the incidence of type 2 diabetes mellitus (Iroth, Kandou & Malonda, 2017). According to researchers, someone who is ≥45 years old has an increased risk of developing DM and glucose intolerance due to degenerative factors, namely decreased body function to metabolize glucose.

The results of the study showed that the majority of respondents were women as many as 54 respondents (68.4%), while the men were as many as 25 respondents (31.6%). The results of this study are in line with the theory that DM is at greater risk experienced by women than men, this is due to physical women having the opportunity to increase body mass index greater. *Premenstrual syndrome*, post menopause experienced by women makes the distribution of body lipids easily accumulated due to hormonal processes experienced, so women are more at risk of developing type 2 DM (Najatullah, 2011).

The results of this study are supported by previous studies namely (Najatullah, 2015). States that in Indonesia shows women have poor control of blood sugar levels. According to researchers differences in blood sugar levels in women and men are caused by differences in behavior and attitudes towards DM. Where in the lifestyle men are more at risk for suffering from DM such as cigarette consumption, so even though based on gender men are not at risk for suffering from DM but their lifestyle also influences the risk for suffering from DM.

The results of the study showed that the majority of respondents had an elementary school (elementary) education of 36 respondents (45.6%), while the least was SI education of 3 respondents (3.8%). A low level of education will be difficult to digest the message or information conveyed. Highly educated people will more easily receive messages or information conveyed by others because it is based on experience and culture that exists in the local community. This situation reflects that people's behavior towards DM and Dyslipidemia is at risk for suffering from DM and Dyslipidemia. Education of respondents has a relationship with DM status. Similarly, the education of respondents has a relationship with the status of Dyslipidemia. The education level is one that cannot be separated from the learning process (Notoatmodjo, 2008). With another meaning of learning is a person's effort to get more information that can be used in survival. In this study, it is known that there is a relationship between education level and non-communicable diseases, especially dyslipidemia and diabetes mellitus (Betteng, 2014).

Education is known that not all respondents complete school and go to college. The level of education of the respondents showed as much as 4% of respondents did not finish school, 2% of respondents graduated from elementary school, 78% graduated from junior high school, 8% graduated from high school, and 8% graduated from college. On the results obtained from respondents the educational level will greatly affect the knowledge of respondents (Widyasari, Syahlani, & Santosa, 2017).

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

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According to researchers the higher the level of education the risk for developing diabetes mellitus is lower and the lower level of education the risk for developing diabetes mellitus is higher. People with high levels of education will usually have a lot of knowledge about health and people who have low levels of education usually lack knowledge. With this knowledge people will have the awareness to maintain health.

The results of the study showed that the majority of respondents with unfavorable family roles were 42 respondents (53.2%), while good family roles were 37 respondents (46.8%). The role of the family is a set of behaviors that are expected of someone in accordance with the social position given both formally and informally. In an informal role, there is the role of the caring family and the motivating family role. In the research, the lowest family role is found, namely the role of caring family. The role of the family in caring includes recognizing problems, making decisions, caring for family members, modifying the environment and utilizing the environment (Friedman, 2010; Isworo, 2010; Putri, Yenia, & Handayani 2013).

In the study of the role of families that are poor, among others, respondents find it difficult to ask for help from families in overcoming the problem of diabetes. Respondents also felt that the diabetes that they were experiencing made my family feel difficult or that my family was disturbed by my diabetes. Also according to family respondents rarely reminded to order diabetes medications.

Analysis of researchers, the role of the family is poor is caused by ignorance of the family about how the role should be carried out by the family in providing care for patients with diabetes mellitus which based on the identification of the questionnaire answers on the questionnaire the role of family in caring for the family is rarely reminded to order diabetes medications. While families who have a good family role in diabetes mellitus patients at home because the family is able to recognize the health problems of diabetes mellitus patients, namely the family knows how to control / control blood sugar levels in patients with diabetes mellitus.

The results showed that the majority of respondents with poor blood sugar control were 53 respondents (67.1%), while good blood sugar control was 26 respondents (32.9%). Control criteria are based on examination of glucose levels, HbA1C levels, and lipid profiles. The definition of good DM is when blood glucose, lipid, and HbA1c levels reach the expected level, as well as nutritional status and blood pressure according to the specified target (Indonesian Endocrinology Association, 2015). Various studies showed 52 respondents (57.8%) with uncontrolled blood sugar levels and showed that in elderly people with DM in Posyandu, Rowo Village, Kec. Sumberbaru District Jember the majority still has high glucose levels in the amount of 32 (88.8%) elderly (Putri, Yenia, & Handayani, 2013; Tribagus, 2015). Opinions of experts say that patients with diabetes mellitus must be able to control blood sugar levels under normal circumstances (Levy, 2008; Putri, Yenia, & Handayani, 2013). Until now, DM can not be cured, but can be controlled by regulating blood glucose levels to remain normal. In controlling and controlling family blood sugar levels have an important role. Diabetes mellitus if not handled properly will cause complications in various organs of the body such as the eyes, kidneys, heart, leg veins, nerves and others. therefore before further complications occur, then treatment and management in patients with diabetes mellitus must be done. The role of the family is needed to achieve maximum health, to achieve the goal of healthy living the participation of patients and families in managing the management of blood sugar levels is very important so that the patient's blood sugar is controlled.

Bivariate Analysis

The results showed that there was a relationship between the role of family and controlling blood sugar levels in patients with Type 2 Diabetes Mellitus (*p value* 0,000. OR 7.06). Supervision and monitoring in the management of DM at any time becomes important, where the role of the family is needed, especially in controlling and controlling blood sugar levels in patients with DM (Waspandji, 2009; Putri, Yenia, & Handayani, 2013). The success of DM management is determined by the active role of the family in controlling blood sugar levels, preventing acute and chronic complications. Diabetes mellitus management planning must be done jointly between patients and families so that blood sugar levels can be controlled (Bantle, Wylie-Rosett,

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

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Albright, Apovian, Clark, Franz, & Wheeler, 2008; Putri, Yenia, & Handayani, 2013). In treating diabetes mellitus patients, the role of the family is needed in managing family members (Waspandji, 2009; Putri, Yenia, & Handayani, 2013).

The family as a group can cause, prevent, ignore or fix the family's own health problems, almost every health problem from the beginning to the settlement will be influenced by the family. The family has a major role in the health care of all family members and not the individual himself who strives to achieve the desired level of health (Friedman, 2010; Putri, Yenia, & Handayani, 2013).

The role and duties of each family member caring for sick family members as the main function of the family as a care that is fulfilling the needs and care and care of sick family members and meet their needs (Effendi, 1998; Putri, Yenia, & Handayani, 2013). Families with family members who suffer from diabetes mellitus certainly need treatment for the effects of diabetes mellitus which causes inability to meet the needs of individuals. The expected role and task of the family is to assist in providing care and control to patients with diabetes mellitus (Rifki, 2010; Putri, Yenia, & Handayani, 2013).

The family is a major role in maintaining health and helping patients in the care and control of diabetes mellitus, encouraging and motivating patients, to continue their lives, convincing patients that they are also an important, needed and chilling part of the family, ensuring that many people are able to control their levels blood sugar then performs normal activities (Friedman, 2010; Putri, Yenia, & Handayani, 2013; Prantika, Susilo, & Tribagus 2015). *The American Diabetes Association* says that the planning of diabetes mellitus management must be carried out jointly between patients and families so that blood sugar levels can be controlled. In the care of patients with diabetes mellitus the role of the family in managing family members is needed (Soegondo, 2009).

According to diabetes mellitus researchers if not handled properly will lead to complications in various organs of the body such as the eyes, kidneys, heart, leg vessels, nerves and others. therefore before further complications occur, then treatment and management in patients with diabetes mellitus must be done. The role of the family is needed to achieve maximum health, to achieve the goal of healthy living the participation of patients and families in managing the management of blood sugar levels is very important so that the patient's blood sugar is controlled.

Analysis of researchers based on the above, families who have a good role, then controlled blood sugar in patients with diabetes mellitus. family is a major role in maintaining health and helping patients in the care and control of diabetes mellitus, encouraging and motivating patients, to continue their lives, convincing patients that they are also an important, needed and chilling part of the family, ensuring that many people are able to control their levels blood sugar then performs normal activities (Putri, Yenia, & Handayani, 2013).

The results showed that of the 20 respondents (54.1%) had a good family role with good blood sugar control caused by several factors: respondents aged 60 years - 69 years had good blood sugar levels compared to age 70 years - 79 years, type sex also affects in this case male respondents have better blood sugar levels compared to women, education with a higher level will have better knowledge about controlling blood sugar.

While there are 17 respondents (45.9%) have a good family role by controlling blood sugar levels are poor. Respondents aged 70 years - 79 years old have poor blood sugar control. This is caused by increasing age, so it will be more difficult to maintain a diet so that control of blood sugar is less controlled, in women who are menopausal, making distribution on the body's lipids easily accumulates caused by hormonal processes experienced, so that women are more at risk of developing type 2 diabetes or blood sugar levels above normal, lack of education can cause even less knowledge about controlling blood sugar.

In addition, 6 respondents (14.3%) had an unfavorable family role with good blood sugar control, according to the researchers this was due to the long-standing respondent suffering from DM for ≥ 5 years which caused the respondent to have a good ability to control blood sugar levels, even though no family member reminded.

While 36 respondents (85.7%) had a bad family role with poor blood sugar control, because the role of the family was one of the factors controlling non-pharmacological blood sugar. And family ignorance

Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

about how the role should be performed by the family in providing care for patients with diabetes mellitus that can cause blood sugar control is poor.

CONCLUSION

The frequency distribution of respondents aged between 60-69 years is as many as 54 respondents (68.4%), female gender is as much as 54 respondents (68.4%), educated at the end of elementary school (SD), namely as many as 36 respondents (45.6 %), duration of DM for ≥ 5 years is 42 respondents (53.2%), blood sugar control is poor that is 53 respondents (67.1%), while controlling blood sugar is good as many as 26 respondents (32.9%), the role of the family is poor as many as 42 respondents (53.2%), while the role of the family is good as many as 37 respondents (46.8%). There is a relationship of the role of the family with controlling blood sugar levels in patients with Type 2 Diabetes Mellitus in Panjang Bandar Lampung Health Centre in 2018 (p value 0,000. OR 7.06).

SUGGESTIONS

The management of health centre to provide counseling to families about the importance of family participation in controlling blood sugar levels in patients with diabetes mellitus. The role of the family in controlling blood sugar levels will provide care and motivation to family members who suffer from diabetes mellitus to continue to control blood sugar levels. includes recognizing family health problems, making appropriate action decisions, providing care for sick families, maintaining or maintaining a healthy home atmosphere, using health care facilities in the community. Nurses In order to provide support to families to play an active role in treating patients with DM so that the patient's blood sugar levels can be stable. Can be used as a basis for further research so that the research carried out is more representative and better than previous research and which focuses on the effectiveness of the family of ability to play a role in caring for patients associated with glucose stability in patients with DM.

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Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com

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Eka Yudha Chrisanto[1] Diploma In Nursing-Malahayati University, Bandar Lampung, Indonesia.
 Email: yudhachrisanto88@gmail.com
Yoko Saputra[2] Public Health Centre Bandar Lampung, Indonesia. Email : yokosaputra@gmail.com
Bahjatun Nadrati[3] Diploma In Nursing-STIKES YARSI Mataram, Indonesia. Email: bahjatun.nadrati.bn@gmail.com