



THE RELATIONS BETWEEN KNOWLEDGE AND THE 5 PILLARS OF MANAGEMENT OF TYPE II DIABETES MELLITUS IN POSBINDU SEHATI

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ABSTRACT

Diabetes mellitus is a chronic disease characterized by increased blood sugar levels or what is often called (hyperglycemia) caused by the failure of the pancreas to produce the hormone insulin, resulting in impaired insulin secretion in the body. The increasing number of people with diabetes mellitus can cause health problems for the community which can be caused by various factors, namely lack of knowledge. One of the efforts to reduce health problems is to increase public knowledge about diabetes mellitus. The management of DM according to PERKENI consists of 5 pillars, namely dietary compliance, physical activity, regular regulation, blood sugar control and education. This research is a quantitative research using cross sectional design. The sampling technique used in this study is a total sampling technique with a total sample of 30 samples at PosbinduSehati. Data was collected using three questionnaires, namely demographic questionnaire, diabetes mellitus knowledge questionnaire, and diabetes mellitus management questionnaire. The results of Chi Square analysis with alternative fisher test obtained p value = $0.026 < = 0.05$ indicating a significant relationship between knowledge and the management of Diabetes Mellitus in PosbinduSehati. Knowledge can improve a person's quality of life which can be influenced by many things, one of which is the knowledge of people with diabetes mellitus in the treatment of diabetes mellitus. Knowledge is a domain of behavior that is very important for the formation of one's actions.

Keywords: Type II Diabetes Mellitus, Knowledge, Pillars of Diabetes Mellitus Management

PRELIMINARY

Diabetes mellitus is a chronic, chronic disease characterized by increased blood sugar levels or what is often called (hyperglycemia) caused by the failure of the pancreas to produce the hormone insulin, resulting in impaired insulin secretion in the body (Smeltzer et al., 2008 in Damayanti, 2008). 2015). Diabetes mellitus can be called the silent killer because it is often not realized by the patient so that when it is

known it has caused complications (Kemenkes RI, 2014).

The prevalence of the disease globally continues to increase every year in all regions of the world. There were 98 million people aged 65-79 years in 2017 with diabetes and aged 20-64 years around 327 million people to a total of 425 million people worldwide and is expected to increase in 2045 to 629 million people. Southeast Asia in 2017 the number of people with DM was 82 million and is predicted to increase by 84% around 151



million in 2015. The largest number of people aged 20-79 years in China, India, the United States, Brazil, Mexico and Indonesia is in sixth place as the largest number of people with DM in the world. (International Diabetes Federation, 2017).

The prevalence of DM in Indonesia according to the Basic Health Research (Riskesdas) in 2018. In 2013 based on blood tests in residents aged 15 years, it was found to be around 6.9% and continued to increase in 2015 around 10.9%. Based on a doctor's diagnosis at the age of 15 years, the largest number of DM sufferers in DKI Jakarta, East Kalimantan, Yogyakarta Special Region and North Sumatra, which is a city that experienced an increase from 2013 to 2018 as much as 2.0%. One of the provinces in Indonesia with a high prevalence of diabetes mellitus is the province of Banten. Data in the Banten area shows that as many as 56,560 people with diabetes mellitus (DinKesBanten, 2011).

The increasing number of people with diabetes mellitus can cause health problems for the community which can be caused by various factors, namely lack of knowledge. One of the efforts to reduce health problems is to increase public knowledge about diabetes mellitus.

Knowledge is a very important factor in determining the behavior of DM sufferers towards the disease they are experiencing. Knowledge is behavior based on a knowledge that is better than one that is not based on knowledge. For DM patients with good knowledge, they can find out how to prevent DM by managing DM to prevent complications.

DM management consists of 5 pillars, namely dietary compliance, physical activity, regular medication, blood sugar control and getting education (PERKENI, 2015). In these 5 pillars the regulation of diet in DM patients is one of the important things in the management of diabetes mellitus. Dietary regulation is very good for people with diabetes so that patients can control blood sugar levels consumed daily, with this patient can adjust their diet by means of the right diet. The right diet can be obtained from good nutritional intake, thus preventing complications.

Dietary compliance in DM sufferers is a success in controlling diabetes mellitus, besides physical activities that are often carried out on a daily basis can also control blood sugar levels, such as walking, going up and down stairs, and sweeping. This physical activity can be done regularly 3-4 times a week with a duration of approximately 30 minutes. Physical activity in addition to controlling blood sugar levels can also maintain body fitness, lose weight and improve insulin sensitivity. Not only eating patterns and physical activity can control blood sugar levels, but regular treatment can also control blood sugar levels. This treatment can be carried out by means of regular checks at the Puskesmas or Hospital with the aim of being able to monitor blood sugar levels so that complications do not occur.

In controlling blood sugar levels in people with diabetes mellitus can be based on knowledge about DM management such as diet compliance, physical activity and medication. Because not all people have good knowledge related to diet compliance,



physical activity and medication. Therefore, it is hoped that in this study can determine public knowledge in controlling diabetes mellitus.

Based on the results of a preliminary survey conducted on 6 people with diabetes mellitus through interviews about the knowledge of patients with diabetes mellitus and management, it was found that 2 people with diabetes mellitus stated that they already knew diabetes mellitus so that they could control blood sugar levels, 4 people with diabetes mellitus stated that they did not know about diabetes mellitus, they only knew that their sugar was high, due to a lack of knowledge about diabetes mellitus so that they could not control blood sugar levels.

RESEARCH METHODS

This research is a quantitative research using cross sectional design. In this study the Independent Variable was Knowledge of Type II Diabetes Mellitus Patients and the Dependent Variable was Diabetes Mellitus Management. The population in this study were patients with type II diabetes mellitus. The sampling technique in this study used a total sampling technique with a total sample of 30 with

RESEARCH RESULT

1. Univariate Analysis

a. Characteristics of respondents by Age

Characteristics of respondents based on age to 30 people with Diabetes

inclusion criteria: 1) DM patients, 2) Cooperative, 3) Can write and read 4) Can speak Indonesian, 5) Willing to be respondents. The data collection tool used in this study was a questionnaire. The questionnaire is in the form of a well-structured list of questions, in the form of entries and in the form of a check list, so that the respondent only needs to fill in and provide a check list for the appropriate answer choices. There are three questionnaires used in this study, namely demographic questionnaire, diabetes mellitus knowledge questionnaire, and diabetes mellitus management questionnaire.

Data analysis is done by making a table and the frequency distribution of each variable, namely the independent variable and the dependent variable. This analysis was conducted to determine the knowledge of patients with type II diabetes mellitus (independent variable) on the management of diabetes mellitus (dependent variable) which was carried out with the Chi-Square Test which aims to examine the difference in percentage between the two sample groups with a 95% confidence level.

Mellitus can be explained in the table below:

Frequency Distribution Of Respondent Characteristics By Age N (30)

Respondent Age	Frequency	%
35 – 45 years old	6	20.0
46 – 55 years old	15	50.0
56 – 65 years old	8	26.7
≥ 65 years old	1	3,3
TOTAL	30	100

**b. Characteristics of respondents by Gender**

Gender characteristics are data for this categorical variable to calculate with a frequency distribution.

Frequency Distribution Of Respondent Characteristics Based On Respondent's Gender

Respondent Gender	Frequency	%
Male	5	16,7
Female	25	83,3
TOTAL	30	100

c. Characteristics of respondents based on Last Education

The last educational characteristic is the data for this categorical variable to calculate the frequency distribution.

Frequency Distribution of Respondent Characteristics Based on The Respondent's Last Education

Respondent Education	Frequency	%
Unschoolled	2	6,7
Elementary	17	56,7
Junior	6	20,0
Senior	4	13,3
College	1	3,3
TOTAL	30	100

d. Knowledge of people with diabetes mellitus

The results of the study with the respondent's knowledge category are in the following table:

Frequency Distribution Of Respondents By Category Of Knowledge

Responden Knowledge	Frequency	%
Good	7	23.3
Poor	23	76.7
TOTAL	30	100

e. Management of Diabetes Mellitus

The results of the study with the respondent's knowledge category are in the following table:

Frequency Distribution By Category Of Diabetes Mellitus Management

DM Management	Frequency	%
Obey	10	33.3
Not Obey	20	66.7
TOTAL	30	100



2. Bivariate Analysis

Bivariate analysis aims to analyze a relationship between knowledge and the management of diabetes mellitus by using

a statistical test, namely Fisher's exact test.

The Relation of Knowledge with Diabetes Mellitus Management

Knowledge	Management				Total	P value
	DM		Obey Not obey			
	f	%	f	%		
Good	5	71.4	2	28.6	7	100
Poor	5	21.7	18	78.3	23	100
Total	10	33.3	20	66.7	30	100

DISCUSSION

1. Age

Based on the results of this study indicate that the average age of diabetes mellitus respondents aged 46-55 years is 15 people (50.0%), aged 56-65 years is 8 people (26.7%), aged 35-45 years is 6 people (20.0%) while 1 person 65 years old (3.3). This is in line with the results of research by Agustina, Noor Diani&Agianto (2018) with the title "Relationship of Patient Knowledge and Behavior regarding Management of Diabetes Mellitus in Banjarbaru, South Kalimantan", that most of the respondents were 60 respondents (53.7%).

Diabetes mellitus can occur in adults aged over 40 years which is one of the risk factors for diabetes mellitus (Nuari, 2017), this is due to anatomical, physiological and biochemical changes. Changes start from the cellular level, then continue at the tissue level and finally at the organ level that can affect homeostasis (Damayanti S, 2015). This is

in line with the opinion of Perkeni (2015) that the age of 45 years and over is a group at high risk of experiencing DM. This is also in accordance with the opinion of Smeltzer and Bare (2008), that age is closely related to the increase in blood sugar, where the increasing age, the risk of experiencing type 2 diabetes is higher. The aging process will cause changes in the anatomy, physiology and biochemistry of the body, one of which is a decrease in insulin resistance in the body.

It can be described from the explanation above that at the age of over 45 years there can be a decrease in a person's body functions and can cause various diseases at different ages. These changes can occur with increasing age so that the body undergoes anatomical changes.

2. Gender

Based on the results of the study showed that the majority of respondents were female, more than male. There were



25 female respondents (83.3%) while there were only 5 male respondents (16.7%). This study is in line with Agustina, Noor Diani&Agianto's research (2018) with the title "Relationship of Patient Knowledge and Behavior regarding Management of Diabetes Mellitus in Banjarbaru, South Kalimantan", showing the results of the study that the majority of the respondents were female as many as 43 people (71.7 %) while male as many as 17 people (28.35) from 60 respondents.

This is in accordance with the literature from Brunner & S8Jouddarth (2014) that women suffer from diabetes mellitus more than men, this is due to increased and decreased levels of the hormone estrogen.

3. Last Education

Based on the results of research with 30 respondents, it shows that the education of respondents who are not in school (6.7%), elementary education (56.7%), junior high school education (20.0%), high school education (13.3%) and tertiary education (3.3%). This is in line with Agustina, Noor Diani&Agianto's research (2018) with the title "The Relationship of Patient Knowledge and Behavior on Diabetes Mellitus Management in Banjarbaru, South Kalimantan" with the results of the last education of respondents being mostly elementary school education, namely 27 people (45.0%) which shows that the majority of respondents have low education. This is in line with other research by Nurayati&Adriani (2017)

with 62 respondents that there are 19 elementary school education (31.0%).

Education can affect the incidence of diabetes mellitus, because someone who has a higher education will have a lot of knowledge about health. With a lot of knowledge, people will realize the importance of maintaining health (Irawan, 2010 in Dita, 2017).

4. Knowledge of Diabetes Mellitus Patients

Based on the results obtained in this study, of the 30 respondents who suffered from Diabetes Mellitus in PosbinduSehati, more people had poor knowledge with a total of 23 people (76.7%) while respondents who had good knowledge were fewer with a total of 7 people (23.3 %) of 30 respondents. Based on the results at the time of the study, the respondent's lack of knowledge was caused by a lack of information and this can be proven from the results of interviews that researchers conducted with respondents, that respondents said they did not get information about Diabetes Mellitus so that respondents did not understand the disease they were suffering from.

That the knowledge of respondents is not only with poor knowledge but there are 7 people who have good knowledge. This is the result of research that good knowledge has something to do with education, and knowledge can affect education. From the results that researchers got, those with higher education have good knowledge about the management of Diabetes Mellitus, and it can be found that



respondents with higher education have poor knowledge about the management of Diabetes Mellitus.

Likewise, respondents with low education have good knowledge about the management of Diabetes Mellitus and it is also found that respondents with low education have poor knowledge about the management of Diabetes mellitus. So it can be concluded that knowledge can affect the respondent's education on compliance in managing Diabetes Mellitus.

Respondents' knowledge about Diabetes Mellitus is a means that can help sufferers carry out the management of diabetes mellitus throughout their lives so that the more patients, the better they understand how to change their behavior and why it is needed (Waspadji, 2015). This is in accordance with the opinion of Notoadmojdo (2012) that knowledge is the result of knowing and this occurs after people have sensed a certain object. The higher a person's level of education, the easier it is for that person to receive information so that the wider the knowledge he acquires.

This is in line with Agustina, Noor Diani & Agianto's research (2018) with the title "The relationship between knowledge and behavior regarding the management of Diabetes Mellitus in Banjarbaru, South Kalimantan", showing that poor knowledge is more than good knowledge. From the results of the study, the results of poor knowledge were 37 people (6.7%).

According to the researchers, the lack of knowledge of people with

Diabetes Mellitus in PosbinduSehati was due to a lack of information about Diabetes Mellitus so that respondents could not expand their knowledge of Diabetes Mellitus. This happens because the respondent's level of education is inadequate in receiving information and old age factors that can affect a person's knowledge, where in old age there is a decrease in body function and decreased ability to remember knowledge.

5. Management of Diabetes Mellitus

Based on the results of data obtained from 30 respondents with Diabetes Mellitus in PosbinduSehati, the majority of respondents with Diabetes Mellitus did not comply with the management of Diabetes Mellitus, as many as 20 people (66.7) while only 10 respondents (33.3%). The results of the study showed that respondents were obedient to the management of DM that respondents routinely came to health care facilities to check blood sugar levels once a month. respondents who do not comply with the management of Diabetes Mellitus because they do not routinely come to health care facilities to check blood sugar levels.

According to the results of the PERKENI consensus (2011), the expected patient behavior is to follow a healthy diet, increase physical activity, use diabetes medication, monitor blood sugar independently, and be able to take advantage of existing health care facilities. Many factors affect respondent compliance. one of them is that the environment also greatly influences the compliance of DM sufferers, an



environment such as social support will make it easier to access information from social support that is around us. And improving community services provided by health workers such as counseling, or providing health activities in the community, this greatly affects the level of patient knowledge so that it can increase patient compliance in managing Diabetes Mellitus (Wexlerbet al and Chyun et al, 2006).

According to the researcher, that the patient's non-compliance in managing Diabetes Mellitus is because the patient does not get much information about the management of Diabetes mellitus so that there are patients who are still not obedient in managing the diabetes mellitus and lack of desire to carry out the management of diabetes mellitus which is good for the health of the patient and Lifestyle changes in patients are still not in accordance with the recommendations given and family support is very important in the management of Diabetes Mellitus. With this, it is also found that patients who are obedient to the management of Diabetes Mellitus, this is because they have received information about diabetes mellitus so that patients can understand how to control blood sugar levels by complying with the management of Diabetes mellitus. And lifestyle changes that have begun to adjust as recommended. It can be concluded that patient compliance in managing Diabetes Mellitus is a major success in controlling blood sugar levels so as not to cause complications that can worsen the

condition of people with diabetes mellitus.

6. Knowledge Relationship with Diabetes Mellitus Management

Based on the results of this study using the Chi Square test with alternative fisher test results $p \text{ value} = 0.026 < = 0.05$, which means that there is a significant relationship between knowledge and the management of Diabetes Mellitus in PosbinduSehati. This is also reinforced by the research of Agustina, Noor Dian & Agianto (2018) that the results obtained in the study with the results of $p \text{ value} = 0.001 < = 0.05$ which means there is a significant relationship between knowledge and behavior about the management of Diabetes Mellitus in patients diabetes mellitus.

From this study, it was found that 30 respondents had good knowledge in obediently managing Diabetes Mellitus. It was found at the time of the study that respondents said they had received information about DM from health workers, where respondents routinely checked blood sugar. So that they get new knowledge by participating in activities at the Puskesmas such as health education programs about DM disease and DM management and participating in elderly gymnastics which is recommended for people with diabetes mellitus to maintain a healthy body. As for the respondents who have good knowledge but do not comply with the management of Diabetes Mellitus, this is because the respondents have a lot of work so they forget to carry out the



recommended Diabetes Mellitus management so that respondents cannot comply with the management of Diabetes Mellitus.

The respondents who have poor knowledge but comply with the recommended management of Diabetes Mellitus. This is because health workers have received information about Diabetes Mellitus that this disease cannot be cured but can be controlled by obediently managing DM in order to maintain blood sugar levels. With this, respondents can comply with the recommendations given and do not want to make their situation worse, even with lack of knowledge about health. With this curiosity, respondents can comply with DM management in order to maintain their body health.

In respondents who have poor knowledge but do not comply with the management of Diabetes Mellitus. This is due to the lack of knowledge of respondents and not receiving information about diabetes mellitus so that respondents do not understand how to manage DM. Thus, respondents who are uninformed will feel indifferent to their illness, this can be proven from the results of interviews with respondents saying that by not complying with the disease it will not heal, so respondents think that if we obey the management of DM, our blood sugar is still high. so don't think too much.

This is in line with the research of Kong, Yein and Jenn (2012) which concluded that lack of knowledge about Diabetes Mellitus causes sufferers to tend

to disobey medication, diet, physical activity and proper use of insulin. Health information and counseling provided to patients includes an understanding of the course of the disease, diet or dietary recommendations that are allowed to be consumed, recommended physical exercise, use of drugs according to dosage, the need for regular control and monitoring of blood sugar levels, and good foot care. to avoid complications of diabetic ulcers.

This is in accordance with the opinion of Wawan and Dewi (2016) which states that a person's knowledge includes the cognitive domain within himself and each person has 6 levels, namely knowing, understanding, application, analysis, synthesis.) and evaluation (evaluation). This level of knowledge does not guarantee that a person behaves according to the knowledge he has, because each individual has a different personality and one's experience in the knowledge possessed by each individual. Knowledge can improve a person's quality of life which can be influenced by many things, one of which is the knowledge of people with diabetes mellitus in the management of diabetes mellitus. Knowledge is a domain of behavior that is very important for the formation of one's actions (Notoadmojo S, 2010).

This is in line with the research of Shofiyah and Henni (2013) which states that the results of the study using the Chi-Square analysis test with the results of $p \text{ value} = 0.016 \leq 0.05$, this shows that there is a relationship between



knowledge and adherence to diabetes mellitus sufferers in the management of diabetes mellitus. . Based on this, it can be concluded that there is a relationship between knowledge and the management of Diabetes Mellitus in Pos bindu Sehati.

CONCLUSIONS AND SUGGESTIONS

The majority of respondents, as many as 23 people out of a total of 30 respondents have less knowledge, so this affects the ability of respondents to implement the 5 pillars of DM management. It is hoped that in the future the nursing field, especially for nurses, can develop health education for people with diabetes mellitus in a sustainable manner in order to expand knowledge and can be applied in daily life.

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