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## Self-Care Activity Determination of Diabetes Mellitus Type-2 Patient in Labuang Baji Hospital

Ida Leida Maria<sup>1</sup>, Natalia Paskawati Adimuntja<sup>1</sup>, Ridwan Thaha<sup>2</sup>, Nurhaedar Jafar<sup>3</sup>

<sup>1</sup>Department Epidemiology, <sup>2</sup>Department Health Promotion, <sup>3</sup>Department Nutrition

### ABSTRACT

Non infectious diseases in the community are a sign of epidemiological transition. One of the non infectious diseases that are found is Diabetes Mellitus (DM) type-2 diseases. The purpose of this research is to know the determination of self-care diabetes activity in patients with type-2 diabetes at Labuang Baji Hospital in Makassar City. The research design is cross-sectional study. The population were all patients with DM type-2 treatment in 2016. Sampling was done by probability sampling technique with simple random sampling method and the number of sample was 136 people. The results showed that respondents with self-care activities were less than 35 people (25.7%) and respondents with good self-care activities as many as 101 people (74.3%). The result of bivariate analysis (chi-square) showed that significant factor was correlated with self-care activity of DM type 2 patients with  $p$ -value  $< 0,05$  is knowledge ( $p = 0,000$ ), health insurance ownership ( $p = 0,022$ ) health workers support ( $p = 0,000$ ). The result of logistic regression analysis showed that the factors significantly correlated with the self-care activity in Diabetes Mellitus type-2 patients were knowledge (OR = 7.900 95% CI: 2.497-24.998). The conclusion of knowledge is a factor significantly associated with diabetes self-care activities.

**Keywords:** Type-2 Diabetes Mellitus, Self-Care, Non infectious disease, epidemiological transition, health workers support

### INTRODUCTION

Non Infectious Diseases is the leading cause of death cases against 36 million people (21.3%) of all deaths worldwide. Prevalence of Diabetes according to World Health Organization (WHO) data in 2015 is 20.9%.<sup>1</sup> It is estimated that more than 285 million people worldwide suffer from Diabetes Mellitus Type-2.<sup>2</sup> Diabetes Mellitus Type-2 patients suffering from other comorbidities (complications) will have an impact on the declining quality of patient's life.<sup>3</sup>

In Indonesia, the incidence of Diabetes Mellitus based on the doctor's diagnosis or symptoms that is equal to 2.1%. Diabetes Mellitus prevalence data based on doctor's diagnosis and symptoms increase with age, but starting at age  $\geq 65$  years will tend to decrease.<sup>4</sup> Prevalence of Diabetes Mellitus in South Sulawesi Province diagnosed by doctor is 1.6%, whereas diagnosed by doctor or by symptom is 3.4%. The number of DM disease cases in 2014 in South Sulawesi is as many as 27.470 new cases and 66.780 old cases with 747 deaths.

The number of Diabetes Mellitus cases in Makassar City in 2013 was 34.396 cases and then increased to 61.677 cases. in 2014 and decreased by 2015, which were 36.873 cases. While for the data of death cases in the year 2013 were 338 cases of death then increased to 668 cases of death in 2014 and decreased to 352 cases of death by 2015.<sup>5</sup>

Data of medical records at Labuang Baji Hospital (RSUD) showed the number of cases of Diabetes Mellitus Type-2 in 2014 were 188 cases of DM with 12 deaths, then increased by the year 2015 as many as 277 cases and decreased again in 2016 as many as 231 cases with 21 deaths. Nursing theory reveals a theory related to self-care is as an activity undertaken by a person where the individual begins and performs an action based on his wishes in order to maintain life, health and well-being. Self-care activities that can be done is diet, physical activity / exercise, blood glucose control, taking medication regularly, foot treatment and conducting lifestyle changes.

Knowledge as optimal diabetes control related to self-care activities. Good knowledge is significantly significant with one of the self-care activities<sup>20</sup> that is controlling HbA1c well ( $p < 0.001$ ).<sup>7</sup> One study in Saudi Arabia found that 15% of patients accessing health services had good glycaemic control.<sup>8</sup> Most of the patients with health insurance had access to health facilities. One study conducted in the United States found that about 96% of health-care respondents in some primary health care centres have good HbA1c control ( $p < 0.05$ ).<sup>9</sup>

One study conducted in Ghana found that 51.3% of respondents had received health counselling from health workers and managed to lose weight through dietary changes and physical activity ( $p < 0.05$ ).<sup>10</sup> Based on the results previous studies<sup>10</sup> have shown, there are several factors that contribute to self-care in patients with type 2 diabetes. However, in this study will focus on knowing factors related to diabetic self-care activities especially in Makassar City, so researchers interested in conducting research to know the factors related to diabetes self-care activity in patients with Type-2 DM at Labuang Baji Hospital Makassar City

### MATERIAL AND METHOD

Type of research used cross-sectional study design. This research was conducted at Labuang Baji Hospital Makassar City on April 15<sup>th</sup> -May 15<sup>th</sup>. Population in this research was case population which is all patient of Diabetes Mellitus Type-2 at Labuang Baji Hospital Makassar City in 2016. The number of sample was 136 people, by using probability sampling technique with simple random sampling method. Data analysis was performed by univariate, bivariate and multivariate analysis using Chi-square through<sup>19</sup> cross tabulation and multiple logistic regressions. Self-care activities of diabetes based on self-care activities performed and the measurements results of blood glucose levels during patients conducted

### RESULTS

The result of univariate analysis in Table 1 shows the distribution of respondents based on age of the majority of respondents who do not perform self-care diabetes activity, which is 50-59 age group was 13 people (25, 0%). For the gender characteristics of respondents, most of the respondents who did not do self-care diabetes activity were women (29, 2%). Distribution

of respondents by education, most of respondents with education level of elementary school who did not do self-care activity of diabetes was 12 people (48, 0%).

Table 1: Respondent Distribution Based on Respondent's Characteristic and Research Variable at Labuang Baji Hospital Makassar City

Characteristic	Diabetes Self-care Activity				Total	
	Less		Good		n (136)	%
	n (136)	%	n (136)	%		
<b>Age</b>						
30-39	1	33,3	2	66,7	3	100
40-49	6	31,6	13	68,4	19	100
50-59	13	25,0	39	75,0	52	100
60-69	12	27,9	31	72,1	43	100
≥ 70	3	15,8	16	84,2	19	100
<b>Sex</b>						
Male	6	15,0	34	85,0	40	100
Female	29	30,2	67	69,8	96	100
<b>Education</b>						
Non-school	4	80,0	1	20,0	5	100
Non-graduated Elementary	0	0	3	100	3	100
Elementary Graduated	12	48,0	13	52,0	25	100
Middle School Graduated	9	37,5	15	62,5	24	100
High School Graduated	10	19,6	41	80,4	51	100
University Graduated	0	0	28	100	28	100
<b>Occupation</b>						
Unemployed	18	29,0	44	71,0	62	100
Civil Servant	2	15,4	11	84,6	13	100
Soldier/Police Officer	0	0	0	0	0	0
Entrepreneur	11	36,7	19	63,3	30	100
Farmer	3	75,0	1	25,0	4	100
Etc.	1	3,7	26	96,3	27	100
<b>Knowledge</b>						
Less	25	61,0	16	39,0	41	100
Sufficient	10	10,5	85	89,5	95	100

Contd...

Health Insurance Ownership						
No	3	75.0	1	25.0	4	100
Yes	32	24.2	100	75.8	132	100
Health Worker Support						
Non-supportive	26	70.3	11	29.7	37	100
Supportive	9	9.1	90	90.9	99	100

Respondents who did not do self-care activity of diabetes were respondents who are unemployed or housewife (IRT) which was 18 people (29, 0%). Patients with Type-2 diabetes who had less knowledge with less self-care diabetes activity were as many as 25 people (61.0%). Patients with Type-2 diabetes who did not have health insurance with less self-care diabetes were 3 people (75.0%), whereas respondents who had health insurance with good self-care activities were 100 people (75, 8%). Respondents who did not do self-care diabetes activity mostly get less support from health workers that are as much as 26 people (70, 3%).

7  
 Table 2: Cross Tabulation Factors Associated with Self-Care Diabetes Activity in Type-2 Diabetes Mellitus Patients at Labuang Baji Hospital Makassar City

Independent Variable	Diabetes Self-care Activity				Total		p value
	Less		Good				
	n (35)	%	n (101)	%	n (136)	%	
<b>Knowledge</b>							
Less	25	61.0	16	39.0	41	100	0,000*
Sufficient	10	10.5	85	89.5	95	100	
<b>Health Insurance Ownership</b>							
No	3	75.0	1	25.0	4	100	0,022*
Yes	32	24.2	100	75.8	132	100	
<b>Health Worker Support</b>							
Less	26	70.3	11	29.7	37	100	0,000*
Sufficient	9	9.1	90	90.9	99	100	

13  
 The result of bivariate analysis using chi-square test with p-value <0, 05 showed that significant factor was correlated with self-care diabetic activity in patients with Type-2 diabetes were knowledge (p = 0,000), health insurance ownership (p = 0,022) and support of health personnel (p = 0,000).

14  
 Multivariate Analysis: The multivariate results in Table 3, the variables most significantly correlated with the self-care activity of diabetes in Type-2 Diabetes Mellitus patients were knowledge (OR = 7,900; 95% CI: 2,497-24,998).

7  
 Table 3: Multivariate Analysis Factors Associated with Self-Care Diabetes Activity in Type-2 Diabetes Mellitus Patients at Labuang Baji Hospital Makassar City

Step 3 <sup>a</sup>	B	Wald	Sig.	OR	CI 95%	
					LL	UL
Knowledge	2,067	12,367	,000	7,900	2,497	24,998

Based on the calculation of logistic equation and probability value can be concluded that DM type-2 patients who do self-care activities of diabetes by obtaining sufficient knowledge about diabetes have a probability associated with self-care diabetes activity that is equal to 98%.

## DISCUSSION

There are several diabetes self-care activities that regulate the diet (diet) according to the daily energy needs of patients, adherence in using insulin and taking oral hypoglycemic drugs, control blood glucose levels and perform adequate physical activity.<sup>7</sup> This study

found on the results of chi-square, the knowledge variable has a relationship with self-care diabetes activity ( $p = 0.000$ ). This result is also in accordance with the results of multivariate test that obtained  $p$  value = 0.000, this means that the knowledge variable is significantly related to diabetes self-care activities.

Sufficient knowledge can shape the patient's skills to support behavior change and improve patient understanding of DM type-2 disease suffered. Knowledge of diabetes can be obtained from education and training conducted through DM education from health workers <sup>3</sup> is intended to maintain optimal health status. So that patients with Type-2 diabetes can do a self-care or diabetes self-care properly.<sup>11</sup>

One of the pillars of the five main pillars in the management of DM disease is DM education. The role of educators by health workers is very important in educating patients of Type-2 DM. The role of health personnel is to provide health education on the management of DM independently and periodically, interventions to DM management counselling that can be done by DM patients themselves. The result of this activity is expected the patient can have sufficient knowledge to be skilled in doing self-care through self-care diabetes activity. Adequate knowledge can help Type-2 DM patients to minimize health problems experienced.<sup>12</sup> One is the risk of complications resulting from a lack <sup>3</sup> treatment and monitoring of the behavior or lifestyle of Type-2 DM patients

Patients with Type-2 diabetes with low knowledge tend to be less self-care diabetic activities. Because of their lack of awareness of the importance of regulating the diet <sup>5</sup> (diet), regularity of taking medication and doing physical activity on blood glucose levels. While patients who have sufficient knowledge about diabetes also encourage them to be skilled at performing self-care diabetes activities well.<sup>13</sup> This variable of health insurance ownership is also related to the state of the patient's economic status. National Health Insurance held by the Government is a solution in combating the problem of public access to health services. The study found that in the chi-square test results, the health insurance ownership variable was related to self-care diabetes ( $p = 0.022$ ). This result did not match the multivariate test result that obtained  $p$  value = 0.584, <sup>4</sup> is means that the health insurance ownership variable was not correlated significantly with self-care diabetes activity in Type-2 DM patient. The findings in this study were DM Type-2 patients who did not have health insurance have less self-care diabetes activity while

most patients with Type-2 DM who have been registered as participants of National Health Insurance have done good self-care diabetes. Thus, ownership of health insurance is associated with self-care diabetes activity in patients with type-2 DM.

Information on self-care <sup>12</sup> activities of diabetes can be known because most people <sup>5</sup> with Type-2 diabetes have access to health care.<sup>14</sup> Patients with Type-2 DM who have taken advantage of health <sup>3</sup> insurance in health services have a positive impact on patients with Type-2 diabetes, as they understand the importance of controlling HbA1c and blood glucose regularly, regulating diet, regularly taking medication and doing sufficient physical activity.<sup>15</sup> The study found that in chi-square test results, variables of health personnel support were related to self-care diabetes ( $p = 0.000$ ). This result did not match the multivariate test result that obtained  $p$  value = 0.105, it means that the variable of health worker support did not correlate significantly with self-care diabetes activity in DM Type-2 patient.

Health workers through <sup>1</sup> counselling and diabetes counselling encourage DM Type-2 patients to perform self-care diabetes activities.<sup>16</sup> One effort to control diabetes done by health personnel is through provision of information by way of education and counselling <sup>3</sup> related dietary rules and physical activity, because Type-2 Diabetes Mellitus is related to the lifestyle of the patient. The existence of this education and counselling, the patient is expected to have sufficient knowledge about diabetes which can further change its behavior so it is expected to control the condition of the disease, one of them by doing self-care diabetes routine.<sup>15</sup>

It is intended that through the communication that is established, the patient can easily understand and comfortably make recommendations from health workers and regular access to health services. Because the respondents in this study are mostly elderly (elderly) patients who cannot access their own health information, so the role of officers through counselling is needed. This should be supported by the affordability of health services both in terms of distance, services and adequate facilities. Therefore, health workers who provide health services should understand related to diabetes which includes counselling, treatment and management of DM by means of a good self-care diabetes activities so that DM patients obedient in self-care.

<sup>4</sup> **Ethical Clearance:** Taken from university committee

**Source of Funding:** Authors their selves

<sup>2</sup> **Conflict of Interest:** Nil

### CONCLUSION

Knowledge variable ( $p = 0.000$ ), health insurance ownership ( $p = 0.022$ ), and support from health personnel ( $p = 0.000$ ) were significant factors related to diabetic self-care activity in Type-2 DM patients. Factors significantly associated with self-care activities of diabetes in patients with Type-2 diabetes at Labuang Baji Hospital. For families accompanying patients in managing diabetes suffered by patients, it is advisable to provide adequate support to patients with type-2 DM to monitor the patient's self-care diabetes activity, one of which is by providing home glucometer to measure and monitor the patient's blood glucose level. For officers should provide education and counselling to patients clearly, because in the study most of the respondents were elderly patients who are difficult to access their own health information.

**Source of Funding:** Authors their selves

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**Ethical Clearance:** Taken from university and communities agreement

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