

## **The Effect of Behavior Factors against Diabetes Mellitus Type 2 on Visitors Community Health Clinic Sering Medan**

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**Abstract:**Diabetes mellitus (DM) is one of the non-transmitted diseases with the highest case. The incidence rate of SM throughout the world is increasing each year. The World Health Organization (WHO) in 2007 revealed that it would rank the fourth with 300 million people in 2020 and would increase to 366 million people in 2030. It can cause complication in the whole body and its patients never check their blood content, have lousy lifestyle, have unhealthy dieting/eating pattern, and lack of physical activity. The objective of the research was to analyze the influence of behavior on the incidence of DSM Type 2 in DM visitors at the Community Health Clinic Sering Medan in 2016. The research used the quantitative method with a case-control design which was classified into the case group with 64 respondents diagnosed with DM and the control group with 64 non-DM respondents. There would be matching with sex and age. The data were analyzed by using univariate analysis, bivariate analysis with McNemar test and multivariate analysis with logistic regression test at  $\alpha = 0.05$ . The result of the research showed that the variables which influence the knowledge were DM ( $p=0.000$ ), attitude ( $p=0.135$ ), and action ( $p=p=0.001$ ). The variable which had the most dominant influence behavior in DM Type 2 visitors at the Community Health Clinic Sering Medan was knowledge at  $p=0.000$  OR=3.9 with 95% CI (0.254-0.652) which indicated that this variable had significant influence on the behavior of DM Type 2 patients at the Community Health Clinic Sering Medan. It is recommended that the management the DM Clinic involve family members in managing DM Type 2 patients by providing education for them in the management of DM Type 2.

**Keyword:**Factor of Behavior, Diabetes Mellitus

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### **I. INTRODUCTION**

Lifestyle changes affect the changing pattern of disease in the community and is a serious enough problem occurred in developed countries, and developing countries is an increasing number of cases of diabetes mellitus (Meetoo & Allen, 2010). The National Health System in health development in Indonesia health degree higher for the productive social and economic, public health services, lifestyle changes, increasing life expectancy, then in Indonesia experienced a shift in disease patterns of infectious become non-infectious it is known by the transition epidemiology. The tendency of the increasing prevalence of non-communicable one of which is DM (Dep.Kes RI, 2007).

Indonesian Health Organization (WHO) in 2007 the prevalence of diabetes of 1.5% -2.3% to 5.7% No. 4 in the world, above India (31.7 million), China (20.8 million), USA States (17.7 million). 2030 India (79.4 million), China and the United States (30.3 million), Indonesia (21.3 million), In 2000 Indonesia was 175.4 million people, in 2010 279.3 million in 2020 to 300 million and 366 million people in 2030 (Dep.Kes RI 2008).

DM is a chronic disorder of fat metabolism carbohydrate and relative lack of insulin, consisting of DM type 2 diabetes, type 2 diabetes, gestational, etc., The most common is diabetes mellitus type 2 diabetes mellitus is a metabolic disorder characterized by a rise in blood sugar due to a decrease in insulin secretion by pancreatic beta cells and impaired insulin (insulin resistance). DM is a chronic disease causing multi-system disorders and has the characteristics hyperglycemia insulin deficiency resulting from inadequate (Smeltzer et al., 2009).

The incidence of patients with DM were great effect an increase in complications, according to Soewondo et al. (2010) in Purwanti (2013) as many as 1785 people with diabetes in Indonesia had complications of neuropathy (63.5%), retinopathy (42%), nephropathy (7.3%), macrovascular and microvascular (6%) and diabetic foot (15%). As for how the prevention of complications in patients with diabetes is to control blood sugar levels, routinely check the blood sugar, hypoglycemia drug consumption, physical exercise lightly and obedient in the low-calorie diet (Arisman, 2011).

The initial survey conducted by researchers on March 5, 2016, with interviewing the low behavior (knowledge, attitude and practice) of patients with diabetes mellitus type 2 DM in Community Health Clinic Sering Medan in the treatment and management of the disease and have not been able to change the negative attitude into a positive. In the 20 visitors who came to the clinic, there are five people newly diagnosed by a doctor who has diabetes nearly 50% of people have the knowledge and skills of low self-care and stress a significant effect on the healing of sickness.

**II. RESEARCH AND METHODS**

This Research case-control sampling using Odds Ratio as 128 respondents in Community Health Clinic Sering Medan and then do identical between age and gender. The data collected primary and secondary data, whereas the primary through secondary to the study questionnaire document.

**III. RESULTS AND DISCUSSION**

Quantitative methods used through a questionnaire to 128 respondents to identify the characteristics of variables such as age, gender, education, and employment. The independent variables include the behavior, attitudes, and actions.

**Table 1.** Univariate Analysis

Variables	Genesis DM Type 2			
	Case		Control	
	n	%	N	%
<b>Age</b>				
<45 years	44	68.7	44	68.7
≥ 45 years	20	31.3	20	31.2
<b>Gender</b>				
Man	20	31.3	20	31.3
woman	44	68.7	40	68.7
<b>Education</b>				
Low	54	84.4	54	84.4
High	10	15.6	10	15.6
<b>Work</b>				
Does not work	28	43.7	28	43.7
Work	36	56.3	36	56.3
<b>Total</b>	<b>64</b>	<b>100</b>	<b>64</b>	<b>100</b>

Showned that the variables age and sex is a matching pair. In the case group - control the majority of respondents with low education as much as 54 (84.4%). Work on the variables of the respondents also seen that in the case group and the control of the majority of respondents worked as many as 36 people (56.2%).

**Table 2.** Frequency Distribution of Cases and Controls Couple at the health center Medan 2016

Variables	Control			
	E+		E-	
	n	%	n	%
<b>Knowledge</b>				
Less (E+)	8	17	39	83
Good (E-)	10	59	7	41
<b>Total</b>	<b>18</b>		<b>46</b>	
<b>Attitude</b>				
Less (E+)	10	26	28	74
Good (E-)	17	25	9	35
<b>Total</b>	<b>27</b>		<b>37</b>	
<b>Action</b>				
Less (+)	16	33	32	67
	11	69	5	31
<b>Total</b>	<b>27</b>		<b>37</b>	

Description:  
 E+: Variable exposure  
 E: Variable unexposed

Table 2 shows that the pair control case there were 39 (83%) of respondents were knowledgeable about the control group, but respondents in the cases of those couples have good knowledge. Further on there are 10 case-control pairs (59%) of respondents who have a good knowledge of the cases, but the control group of couples has less knowledge.

Of the pair are 28 control cases (74%) of respondents who have a lack of the control group, but the case group had a right attitude. Furthermore, there are 17 (65%) of respondents who have a right attitude on the cases, but the control group of couples has less attitude. There are 32 control cases (67%) of respondents who have less action in the control group, but the group of cases two have a good action. Furthermore, there were 11 (69%) of respondents who have a functional action group of the couple's case does not have a good action, but the control group had less action.

**Table 3.** Bivariate analysis with the McNemar test

Variables	Controls (n = 64)				P	OR	95% CI
	E+		E-				
	n	%	n	%			
Knowledge							
Good (E +)	8	17	39	83	<0.001	3.9	1.911 to 8.760
Less (E-)	10	59	7	41			
Attitude					.101	1.6	0.870 to 3.207
Good (E +)	10	26	28	74			
Less (E-)	17	65	9	35			
Action							
Good (E +)	16	33	32	67	0,001	2.9	1,428-, 397
Less (E-)	11	69	5	31			

Note:

\*Significant (p <0.05)

E +: Variable exposed

E: Variable unexposed

Analysis result of the influence of knowledge on the incidence of type 2 diabetes showed that of the statistical test result obtained by value p = <0.001, it can be concluded that there is the influence of knowledge on the incidence of type 2 diabetes mellitus results obtained by analysis of the value (OR = 3.9 95% CI 1.911 to 8.760) meaning that respondents who suffer from type 2 diabetes are 3.9 times the tendency to have less knowledge than those suffering from type 2 diabetes.

The analysis results attitude towards the incident type 2 diabetes showed that the statistical test result obtained by value p = 0.101 we can conclude there are no influence attitudes towards diabetes mellitus type 2. The results obtained by analysis of the value (OR = 1.6 95% CI 0.870 to 3.207) exposure means (attitude) is a protective factor or reduce the incidence of type 2 diabetes mellitus.

The analysis results of action on the incidence of type 2 diabetes showed that of the statistical test result obtained by value p = 0,001 it could be concluded there are significant measures against the occurrence of diabetes mellitus type 2. The results of the analysis obtained by value (OR = 2.9 95% CI 1.428 to 6.397) meaning that respondents who have type 2 diabetes are 2.9 times the tendency to have less action than those who have type 2 diabetes.

**Table 4.** Outcome Variables That can Log In logistic regression model between Knowledge, Attitudes, and Actions

No.	Variables	P Value Assessment
1.	Knowledge	<0.001 * Modeling
2.	Attitude	0.136 * Modeling
3.	Action	0,019 * Modeling

Showed that all variables have value p <0.25 so that all these variables (Knowledge, Attitudes, and Actions) are included in the model as shown in Table 5.

**Table 5.** Multivariate Analysis selection results in Conditional Logistic regression

Variables	p-value	OR	95% CI
Knowledge	<0.001	6.271	2.745-14.322

Attitude	0.135	2,558	1.103 to 5.931
Action	0,019	3.607	1.534 to 8.478

Based on table 5 shows that of all the variables have been significant on the incidence of type 2 diabetes mellitus with  $p < 0.05$  then the dominant variable affecting the incidence of type 2 diabetes is knowledge with value ( $p = < 0.001$ ; OR = 6.3 95% CI 2.745 to 14.322) meaning that respondents were knowledgeable about 6.3 times the tendency to suffer from type 2 diabetes compared with kind knowledgeable. Based on the results of research conducted by continuous sampling with a sampling technique using a sample of cases performed in patients with type 2 diabetes, whereas controls on a non-diabetic patient are found low educational factors to be the cause of diabetes affects 128 workers.

### **Education**

The level of education influences the incidence of diabetes mellitus type 2. People with higher education levels will usually have much knowledge about health. Most respondents' education is an elementary school. In the analysis, the variables of education made into two categories: low and high. Low education which is the respondent never educated among school until junior high school graduation. Meanwhile, higher education is when respondents are between graduating high school until college graduation. In univariate analysis, it appears that most respondents educated. Based on the analysis of the relationship between low educations with the incidence of type 2 diabetes, is the conclusion obtained is no significant relationship between education and the incidence of type 2 diabetes mellitus. This is in line with research conducted Yusra (2011) says that education levels affect a person's behavior in seeking care and treatment of the disease, as well as selecting and deciding on the action to be undertaken therapy to overcome his health problems. In the study Gautman et, al (2009) in Yusra (2011) also found that low education levels associated with diabetes incidence.

### **Work**

This type of work is also closely related to the incidence of diabetes. One's job affects their physical activity levels. Based on the analysis of the relationship between work with the incidence of type 2 diabetes, found that there was no significant relationship between work with the incidence of type 2 diabetes with a job analysis DM insignificant incident might be because the percentage between working and not working groups were not balanced. Most respondents are not working groups and also female. This group is a housewife. Variables of this work have to do with physical activity. The group does not work does not necessarily have a physical activity. Housewife precisely performs various activities such as sweeping, cooking and washing, The type of work a person affects the level of physical activity because physical activity can control blood sugar. Insufficient insulin to convert glucose into energy will arise DM (MoH, 2010). In line with research conducted by Sujaya (2009), that the people who light physical activity had a 4.36 times greater risk of developing type 2 diabetes compared with people who have moderate to severe activity.

### **Age**

The results showed that the number of respondents the majority of patients with type 2 diabetes are age  $< 45$  years with the number of 44 people (50%) and age  $\geq 45$  years of 20 people (50%). DM can attack the inhabitants of many layers, both regarding economy low, middle, high, some concerning age. In this study, people aged  $< 45$  more at risk of developing diabetes compared with people aged  $\geq 45$  years. This is consistent with several epidemiological studies that say that the level of vulnerability of type 2 diabetes disease outbreaks underage.

### **Gender**

It is seen that there is a significant influence between behavioral factors on the occurrence of type 2 DM with gender. This is in line with the results of the Rumiyanthi study (2008) showed that more women have type 2 diabetes than men. Some risk factors such as obesity, lack of activity/exercise, age and history of diabetes during pregnancy cause a high incidence of diabetes in women.

In addition to women have high levels of anxiety or stress is higher than in men. In conditions of stress, stress hormones in the body that are to be issued which then can affect blood sugar levels (Smeltzer and Bare, 2001). This can lead to obesity, insulin resistance, and elevated blood lipids. When underway thus continuously then it will progress to type 2 diabetes mellitus (Florence, 2013).

Based on the results of research in the DM Clinic Health Center Sering Medan obtained the distribution of knowledge in people with type 2 diabetes mellitus is a majority of respondents have less knowledge in case group is 49 people (64.5%). In the cross table shows that of the 76 respondents were less knowledgeable, there are 49 respondents (64.5%) is not good behavior. While 52 respondents were knowledgeable good, 15 respondents (28.8%) less good behavior shows that the proportion of respondents who are knowledgeable about

a lot of diabetes mellitus. For knowledge of the behavior of diabetes mellitus type 2. The value of OR = 4.477 95% (from 2.089 to 9.591) indicates that respondents were not knowledgeable either 4.4 times estimated likely to have worse conditions than the knowledge that the respondents were well behaved.

Based on the above explanation can be assumed that a good knowledge of DM patients can be caused by various factors such as patients often get information on the DM and DM therapy itself. This is consistent with the results of research Aini (2011) stated that although a good knowledge of DM patients (100%) but only 54% of therapy practice, it is likely because the patient is often getting counseling from health centers and hospitals.

Based on research conducted on respondents who have a right attitude/behavior in behaving the respondents will be faster able to know and deal with the occurrence of type 2 diabetes. The higher the action, the more influence the improvement of the patient's health that can be seen from therapy or self-care. Here is needed is how the respondent's actions take advantage of land service to DM type 2, many respondents on the control suffered from DM type 2

#### **IV. CONCLUSION**

There was an effect of knowledge on the occurrence of type 2 DM. The incidence of DM type 2 in the visitors at the DM Clinic in the case group of respondents was less knowledgeable in the control group, but in the case group was well knowledgeable. Less knowledge can be caused because it is not clear about DM disease and undergoing treatment regularly, then also there is no effect of attitude toward the happening of type 2 diabetes. The incidence of DM type 2 on the visitors in DM Clinic in the case group - control of respondent have less attitude on the control group, but in case groups have a right attitude. Fewer attitudes can be caused because the understanding of non-DM patients is still low so that if the patient does not determine the attitude toward the occurrence of type 2 diabetes. In the case, group is expected to be better so that the patient does not become more severe result in more fatal and impact to the occurrence of other diseases.

City Health Office and Clinic DM Community Health Clinic Sering Medanneed to develop more comprehensive activities that are by improving health promotion, especially about the non-communicable disease by focusing on improving prevention of the happening of more severe disease like DM type 2 especially to increase knowledge and action of the family through activities such as counseling. It can be done by giving education

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