Risk Factors for Type II Diabetes Mellitus in the Work Area of UPTD Public Health Center Lampaseh in 2020

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Abstract

Risk factors for type 2 diabetes mellitus that cannot be modified consist of age, family history of diabetes mellitus. While the risk factors for type 2 diabetes mellitus that can be modified include obesity, lack of physical activity, hypertension, dyslipidemia, unhealthy diet, smoking behavior. In addition, the wrong diet can cause type 2 diabetes such as consuming fast food, sweet foods, soft drinks. The purpose of this study was to determine the Risk Factors for Type II Diabetes Mellitus in the UPTD Work Area of the Lampaseh Health Center 2020. This study was analytic with a case control design. Population and sample amounted to 27 people. The study was conducted on January 4-16, 2021 and analyzed using odds ratios. The results showed that there was an effect of age (p value = 0.043, OR = 0.245), family history (p value = 0.019, OR = 5.339) and obesity (p value = 0.011, OR = 0.182) on the risk factors for type II Diabetes Mellitus in Indonesia. Working Area UPTD Lampaseh Health Center. It is recommended that health workers can provide counseling about type II diabetes mellitus (DM) to all DM patients, so that DM patients know about further treatment and can socialize to DM patients the risk if they have a family history.

Keywords: *Diabetes Mellitus, Obesity, Age, Family Story.*

1. Introduction

According to the World Health Organization (WHO) in 2016, there are 415 million adults with diabetes in the world, a 4-fold increase from 108 million in 1980. By 2040 it is estimated that the number will be 642 million. Nearly 80% of people with Diabetes are in low- and middle-income countries. The percentage of adults with diabetes is 8.5% (1 in 11 adults has diabetes). Currently, Indonesia is included in the list of the 10 countries with the highest diabetes sufferers in the world, ranking 7th. The type of diabetes most experienced by Indonesians is the second type because there are several Indonesian cultures that cause diabetes, such as lack of exercise, eating too much and being overweight (obesity) (Nuraisyah, 2017).

Based on Basic Health Research (Riskesdas) the prevalence of people with Diabetes in Indonesia shows an increasing trend, from 5.7% in 2013 to 6.9% in 2018. In Indonesia, two out of three people with Diabetes Mellitus are not aware that they have Diabetes Mellitus, so it is too late to access health services when there are complications. The prevalence of overweight or overweight is 13.5% and obesity is 15.4% which is one of the biggest risk factors. Diabetes Mellitus is increasing and it is estimated that by 2035, the number of people with Diabetes Mellitus will reach 14.1 million (Riskesdas, 2018).

Based on the Health Profile of the Aceh Provincial Health Office in 2019 the prevalence of DM sufferers in Aceh in 2019 was 138,291 sufferers, while those who received services according to standards were 95,005 or 69% as many as 14,904 cases (9.62%). Based on the Lampaseh Health Center report, in 2018 the prevalence of DM in the working area of the Lampaseh Health Center UPTD was 114 cases, then there was an

increase in cases in 2019 of 144 cases (Health Profile of the Lampaseh Health Center UPTD, 2019). Based on data from the BP General Register of the UPTD Puskesmas Lampaseh in 2019 it is known that in the working area of the puskesmas there are 6 villages and data obtained for DM sufferers in the Working Area of the Lampaseh Puskesmas are 144 patients/cases.

DM risk factors consist of factors that can be modified and factors that cannot be modified. Risk factors for type 2 Diabetes Mellitus that cannot be modified include age, family history of DM. Meanwhile, modifiable risk factors for type 2 Diabetes Mellitus include obesity, lack of physical activity, hypertension, dyslipidemia, unhealthy diet, smoking behavior (Panduan Teknis PTM, 2012). Diabetes Mellitus is a progressive chronic disease that can cause various complications in other organs, especially the eyes, kidneys, nerves, heart and blood vessels. Diabetes cannot be cured but blood sugar levels can be controlled through diet, exercise and medication. To be able to prevent the occurrence of chronic complications, good DM control is needed (PERKENI, 2011).

2. Method

This research is a type of analytical research using a case control research design, which is an analytical study that concerns how risk factors are studied using a retrospective approach, starting with identifying patients with certain effects or diseases (case group) and groups without effects (control group).

The case population in this study was all type 2 diabetes mellitus sufferers who were domiciled in the working area of the Lampaseh Health Center. Meanwhile, the control population is not diabetes mellitus sufferers who live in the working area of the Lampaseh Health Center. The case sample was type 2 diabetes mellitus who went to the UPTD Puskesmas Lampaseh as many as 27 people taken from medical record data. Meanwhile, the control group consisted of 27 people living in the working area of the Lampaseh Health Center and not suffering from type 2 diabetes mellitus. The case sample was taken by total sampling, while the control sample used a probability simple random sampling technique, namely each member or unit of the population has the same opportunity to be selected as a sample.

Data analysis in this study used univariate analysis and bivariate analysis using the Chi-square Correlation Test with a significance level of $\alpha = 0.05$ and Odds Ratio (OR) to see risk factors.

3. Results and Discussions

Univariate analysis

Univariate analysis is intended to describe each independent variable and dependent variable using a frequency distribution table.

Table 1. Frequency Distribution of Type II Diabetes Mellitus, Age, Obesity and Family History in the Work Area of the Lampaseh Health Center in 2020

No.	Incidence of Type II Diabetes Mellitus	Grup			
		Cases		Control	
		f	%	f	%
1.	≥200 mg/dl	23	85,2	2	7,4
2.	<200 mg/dl	4	14,8	25	92,6
	Total	**27**	**100**	**27**	**100**

No.	Age	Grup			
		Cases		Control	
		f	%	f	%
1.	Adult	5	18,5	13	48,1
2.	Elderly	22	81,5	14	51,9
	Total	**27**	**100**	**27**	**100**

No.	Obesity	Grup			
		Cases		Control	
		f	%	f	%
1.	Obesity	22	81,5	12	44,4
2.	No Obesity	5	18,5	15	55,6
	Total	**27**	**100**	**27**	**100**

No	Family History	Grup			
		Cases		Control	
		f	%	f	%
1.	There is	14	51,9	23	85,2
2.	There isn't any	13	48,1	4	14,8
	Total	**27**	**100**	**27**	**100**

From the table above it is known that of the 54 respondents studied, it is known that the incidence of type II diabetes mellitus in the working area of the Lampaseh Health Center was 27 people. And of the 27 respondents in the case group, 22 people (81.5%) had type II diabetes in the elderly and 5 people (18.5%) had type II diabetes in adulthood. Of the 27 respondents in the case group, the majority were obese, namely 22 people (81.5%). Of the 27 respondents in the case group, 14 people (51.9%) had a family history.

Bivariate Analysis

Bivariate analysis is intended to determine the effect of each independent and dependent variable.

Table 2. The Effect of Age on the Incidence of Type II Diabetes Mellitus in the Work Area of the Lampaseh Health Center in 2020

No.	Age	Incidence of Type II Diabetes Mellitus				P-Value	α	OR	Cl 95%
		Cases		Control					
		f	%	f	%				
1.	Adult	5	18,5	13	48,1	0,043	0,05	0,245	0,072-0,837
2.	Elderly	22	81,5	14	51,9				
	Total	**27**	**100**	**27**	**100**				

Based on the table above, it can be seen that cases of diabetes mellitus are more common in the elderly, namely as many as 81.5% (22 people), and adults as much as 18.5% (5 people). From the results of statistical tests, it was found that the P value was 0.043, which was smaller than the value of 0.05, and this could mean that there was an influence between age and the incidence of type II DM. And the Odd Ratio (OR) value obtained is 0.245 (OR <1) meaning that respondents who are entering old age have trigger

factors or the initial emergence of type II diabetes mellitus compared to adult respondents.

At the age of 40 years generally humans experience faster physiological decline. DM is more common at the age after 40 years. Especially at the age of over 45 years accompanied by overweight and obesity. Most people with diabetes mellitus in Indonesia are aged 38-47 years with a proportion of 25.3%. The risk of diabetes mellitus increases with age (Perkeni, 2015).

The increasing incidence of type 2 diabetes mellitus in respondents, both cases and controls, is more likely to occur in the elderly, which ranges from 45 years and over. This can be caused by eating patterns and lifestyles that are not good or unhealthy, for example eating too many foods containing excessive sugar, setting stress incorrectly, setting meal times that are not good, liking to consume ready-to-eat food and drinks which trigger an increase in blood sugar in the body (ADA, 2014).

Table 3. The Effect of Obesity on the Incidence of Type II Diabetes Mellitus in the Work Area of the Lampaseh Health Center in 2020

No.	Obesity	Incidence of Type II Diabetes Mellitus				P-Value	α	OR	Cl 95%
		Cases		Control					
		f	%	f	%				
1.	Obesity	22	81,5	12	44,4				
2.	No Obesity	5	18,5	15	55,6	0,011	0,05	0,182	0.053-0.624
	Total	**27**	**100**	**27**	**100**				

Based on the table above, it can be seen that those who were obese in the case group were 81.5% (22 people) while those who did not have obesity were 18.5% (5 people). From the statistical test results, it was obtained that the P value was 0.011 which was smaller than the value of 0.05 and this could mean that there was an influence between obesity and the incidence of type II DM. And the Odd Ratio (OR) value obtained is 0.182 (OR <1) meaning that respondents who have obesity will be the initial or trigger factor for type II diabetes mellitus compared to respondents who do not have obesity.

Obesity is excessive fat accumulation that occurs due to an imbalance between calorie consumption and energy requirements. Parameters that can be used to determine a person's nutritional status is by calculating BMI. Based on Perkeni (2015) groups with excess body weight (Body Mass Index ≥25 Kg/m2) are at risk of suffering from Diabetes Mellitus. Obesity is a predisposing factor for insulin resistance. The more fat tissues in the body, the more resistance the body will have to insulin action, especially if body fat or excess weight accumulates in the central or abdominal area. This is because fat can block insulin so that glucose cannot be transported into cells and accumulates in blood vessels.

Table 4. The Effect of Family History on the Incidence of Type II Diabetes Mellitus in the Work Area of the Lampaseh Health Center in 2020

No.	Family History	Incidence of Type II Diabetes Mellitus				P-Value	α	OR	Cl 95%
		Cases		Control					
		f	%	f	%				
1.	There is	14	51,9	23	85,2				
2.	There isn't any	13	48,1	4	14,8	0,019	0,05	5,339	1.451-19.646
	Total	**27**	**100**	**27**	**100**				

Based on the table above, it can be seen that those who had a family history in the case group were 51.9% (14 people), while those who did not have a family history in the case group were 48.13% (13 people). From the results of statistical tests, it was found that the P value was 0.019 which was smaller than the value of 0.05 and this could mean that there was an influence between family history and the incidence of type II DM. And the Odd Ratio (OR) value obtained is 5.339 (OR> 1), meaning that the variable history of respondents who have a family history of diabetes is a risk factor, meaning that family history is a variable that causes Type II DM. Respondents who have a family history of diabetes are more at risk of developing Type II Diabetes Mellitus (DM).

If someone has a family history of type 2 DM, it can be difficult to know whether it is due to lifestyle factors or genetic susceptibility. Most likely it is due to both. Studies show that a person can prevent type 2 Diabetes by exercising and losing weight (Affisa, 2018).

Someone will be easily affected by DM if they have a family history from the mother. This is probably due to a combination of genes that are inherited by the mother during pregnancy. The risk of getting DM from the mother is 10-30% greater than from the father. This is because the decrease in genes while in the womb is greater from the mother than from the father.

4. Conclusions

There is an influence of age, obesity and family history on the risk factors for the occurrence of type II Diabetes Mellitus in the Working Area of the UPTD Puskesmas Lampaseh.

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