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Risk Factors Related to Diabetes Mellitus

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ABSTRACT

The efforts to control diabetes mellitus are carried out by improving the management of the main risk factors for diabetes mellitus in primary health care facilities and community empowerment. Activities carried out in this study, data collection in the form of primary data was carried out by filling out questionnaires about risk factors related to diabetes mellitus which consisted of 13 items of questions which included risk factors for gender, age, genetics/heredity, obesity/BMI, diet, pattern of exercise/activity, smoking, hypertension and stress. Sampling technique is done by non probability sampling method through purposive sampling. The results showed a mean age of 54.34 years. The lowest age of respondents was 34 years and the highest age of respondents was 70 years, male sex 26% and female 74%, had a family history of diabetes mellitus 58%, respondents who had a pattern of eating/drinking were sweet 90%, had sports activities 58%, has a normal body mass index of 56% and who has a body weight of more than 30% and obesity 6%, has a smoking habit of 16%, has a history of hypertension 54%, has stress in life 30%. These factors will reduce the occurrence of diabetes mellitus and keep blood sugar levels stable.

Keywords: diabetes mellitus, risk factor, primary health care facilities, community empowerment

Introduction

Diabetes mellitus is a metabolic disease which has a collection of symptoms since an increase of blood glucose levels above normal values (hyperglycemia). It is because decreasing in the body's ability to react with insulin, impaired insulin secretion, or both.^{1,2,3} There is an increasing prevalence of diabetes mellitus throughout the world related to the increasing population, increasing life expectancy, urbanization that changes traditional lifestyle into a modern lifestyle, the prevalence of obesity increases, and physical activity are lacking.

Efforts to control diabetes mellitus are implemented by improving the management of the main risk factors for diabetes mellitus in primary health care facilities and community empowerment.⁴ Those efforts will be

effective and efficient if we can identify specific diabetes risk factors that are specific to the diamond mining community in South Kalimantan that is Cempaka sub-district in Banjarbaru. Health problems in the mining area are important to know in South Kalimantan.

Specific risk factors possessed by people with diabetes mellitus in the Cempaka Village need to be identified and analyzed as base developing preventive efforts for diabetes mellitus in the community in the Cempaka Village area. There was no research has been conducted on the analysis of risk factors associated with diabetes mellitus in the community of Cempaka Village. Based on the phenomena and results of previous studies, researchers are interested to conduct research on the analysis of risk factors associated with diabetes mellitus in the community of Cempaka Village.

Method

The research method used is research carried out on a set of objects that usually aim to see a picture of the phenomena that occur within a particular population.⁵ This study describes the risk factors associated with the incidence of diabetes mellitus.

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The population in this study were all patients with diabetes mellitus in the Cempaka village. Sampling is done by non-probability sampling method through purposive sampling where this technique is used to select samples between populations according to what the researcher wants (goals/problems in the study) so that the sample can represent the characteristics of the population.⁵

Data collection in the form of primary data was taken on by filling out questionnaires about risk factors related to diabetes mellitus which consisted of 13 items of questions which included risk factors for gender, age, genetics/heredity, obesity/BMI, diet, exercise/activity patterns, smoking, hypertension, and stress.

Result & Discussion

The result of this research are:

Table 1: Characteristics of Respondent

	Mean	Min-Maks
Weight	57,64 kg	39 – 85 kg
Height	155,42 cm	143 – 170 cm
BMI	23,848	15,6 – 33,3
Respiration Rate	20,44 times/ menit	15 – 25 times/ menit
Pulse	84,02 times/ menit	64 – 100 times/ menit
Temperature	36,760° C	36,0 – 38,0° C
Random Plasma Glucose (RPG)	228,26 mg/dl	109-575 mg/dl
Duration of Illness	3,95 years	0-21 years

Age Risk Factors in Diabetes Mellitus

Table 2: Distribution of Age Factors of Respondents

Variable	Mean	Min-Maxs	Deviation Standard
Age (Year)	54,34	34-70	6.787

Based on the analysis of patients with diabetes mellitus, it is known that the average age is 54.34 years. The lowest age of respondents was 34 years and the highest age of respondents was 70 years with a standard deviation of 6.787 years. Age affects the risk and incidence of diabetes mellitus where according to

Sudoyo, ages that have reached more than 30 years will experience anatomical, physiological and biochemical changes.⁶ Then blood glucose levels will rise 1-2 mg/dL/year when fasting and will rise 5, 6-13 mg/dL/year at 2 hours after meals. In middle adulthood various behaviors that often affect health such as nutrition, smoking and physical activity that causes obesity so this behavior increases the risk of developing diabetes.

Risk Factors in Diabetes Mellitus

Table 3: Distribution of Risk Factors

Risk Factors	Frequency (n = 50)	Percentage
Gender		
Male	13	26 %
Female	37	74 %
Total	50	100 %
Family History of Diabetes Mellitus		
Yes	29	58%
No	21	42 %
Total	50	100%
Characteristics of Respondents		
Yes	45	90%
No	5	10%
Total	50	100%

Table 3: Distribution of Risk Factors (Conts.)

Risk Factors	Frequency (n = 50)	Percentage
Physical Activity		
With Physical Exercise	29	58%
Without Physical Exercise	21	42%
Total	50	100%
Body Mass Index		
Less Weight	4	8%
Normal	28	56%
Over Weight	15	30%
Obesity	3	6%
Total	50	100%
Smoking Habit		
Smoking	8	16%
Not Smoking	42	84%
Total	50	100%
Hypertension		
With Hypertension	27	54%
Without Hypertension	23	46%
Total	50	100%

Conted...

Stress		
Have Stress	15	30%
Have not Stress	35	70%
Total	50	100%

Gender Risk Factors in Diabetes Mellitus: The results of the data analyst respondents in table 3 were 26% male and 74% female sex. Where women suffer from diabetes mellitus more than men. This study is the same as the results of research conducted by Isnaini which shows that sex frequency tends to be greater in women compared to men.⁷

This research is in accordance with the research conducted by Trisnawati which shows that the number of respondents is female more than male respondents.⁸ In the study conducted by Samodra also showed the same results namely more respondents were female than male respondents.⁹ According to Irawan, women are more at risk of developing diabetes because physically women have a greater chance of increasing their body mass index. Post-menopausal monthly cycle (premenstrual syndrome) syndrome that makes the distribution of body fat easily accumulated due to the hormonal process so that women are at risk of developing diabetes mellitus.¹⁰

Genetic or Hereditary Risk Factors in Diabetes Mellitus: The results of the analysis of the data seen in table 3, found that those who had a family history of diabetes mellitus were 58% and those without a history of diabetes mellitus were 42%. Other factors that contribute greatly to the prevalence of diabetes mellitus are hereditary or genetic factors. People who have a family history of diabetes mellitus are more at risk than people who have no history of diabetes mellitus.

This is similar to previous studies that showed the occurrence of type II diabetes mellitus would increase two to six times if parents or siblings experience this disease, the risk for type II diabetes in identical twins is 75-90%, which indicates that the factor genetic (hereditary) role in the incidence of diabetes mellitus in a person.¹¹

Risk Factors for Diet in Diabetes Mellitus: The respondent's data are found in table 3 which has a sweet food/drink consumption pattern of 90% and those who do not consume sweet foods/drinks 10%.

It can be seen that people with diabetes mellitus have a diet that likes sweet foods and drinks as the consumption of sweet and fatty foods is significantly associated with the incidence of diabetes mellitus. This is in accordance with the research conducted by Wicaksono who reported that the habit of consuming sweet foods has a two-fold risk of developing diabetes mellitus and makes blood sugar levels tripled three times.¹²

Risk Factors for Physical Activity in Diabetes Mellitus: In this study data (Table 3) obtained respondents who have sports activity 58% and those who do not exercise 42%. In contrast to the research conducted by Dolongseda who got the results that the pattern of physical activity in patients with diabetes mellitus was the respondent with a mild activity pattern of 96.0% and moderate activity patterns of 4.0%.¹³

It is found that many people with diabetes mellitus who do physical activities have very good conditions. This is because exercise plays a role in regulating blood glucose levels. The main problem in diabetes mellitus is a lack of response to insulin (insulin resistance) so that glucose cannot enter the cell. Membrane permeability to glucose increases when muscles contract because muscle contraction has insulin-like properties. Therefore, during physical activities such as exercise, insulin resistance decreases. Physical activity in the form of exercise is useful as blood sugar control and weight loss in diabetes mellitus.¹⁴

Risk Factors for Obesity in Diabetes Mellitus: The results of the data analysis of respondents (Table 3) who have a Normal Body Mass Index of 56%, and those who weigh more than 30%, and are obese 6%. According to Sari, the cause of diabetes mellitus is the lack of production and availability of insulin in the body or the occurrence of impaired insulin function, which is actually enough. Insulin deficiency is caused by damage to a small part or most beta cells of Langerhans Island in the pancreas gland which functions to produce insulin. That being because of hereditary factors, viruses and bacteria, toxic substances, and excessive weight nutrition (obesity) that can cause diabetes mellitus due to insulin, those who want to spread into cells are blocked as a result of sugar accumulating.¹⁵

This study nearly 56% of respondents possessed Normal BMI, this could be because the ones related to the physical activity carried out by people with diabetes

mellitus have an effect on maintaining BMI in people with diabetes mellitus.

Based on the interviews with patients of diabetes mellitus, they initially had obese weight but when they suffered from diabetes mellitus they lost weight. This is in accordance with the signs of diabetes mellitus, namely weight loss.

Risk Factors for Smoking in Diabetes Mellitus: The results of the data analysis of respondents (Table 3) who had a 16% smoking habit and who did not have a smoking habit were 84%. Where all who smoke are men. Smoking is known as a risk factor for coronary heart disease. However, after years, data collection research shows that smokers who smoke for a long time/chronic have a higher risk of developing insulin resistance. In diabetic patients, it is known that smoking exacerbates metabolic control. It can be proved that a larger dose of insulin is needed for the same metabolic control in nonsmokers in diabetic patients.¹⁶

Risk Factors for Hypertension in Diabetes Mellitus: Based on the respondent's data analysts (Table 3), who have a history of hypertension are 54% and those without a history of hypertension are 46%. This is similar to previous studies with 54 subjects with diabetes mellitus. It is known that 66.6% of subjects suffer from hypertension, and the rest 33.4% of subjects have normal blood pressure, people with diabetes mellitus have hypertension.¹⁷

Many studies have found an association between increased hypertension in patients with diabetes mellitus. People who suffer from diabetes mellitus, especially type 2, have a risk of 2 to 4 times more susceptible to death due to cardiovascular disorders than people who do not suffer from diabetes mellitus and hypertension occur 2 times more vulnerable in patients with diabetes mellitus than non-diabetes mellitus in the same age group. In addition, diabetic patients accompanied by hypertension increase the risk of coronary heart disease, stroke, nephropathy, and retinopathy. In fact, diabetes accompanied by hypertension increases by 75% of morbidity and mortality in people who already have previous risk factors.¹⁸

Risk Factors for Stress in Diabetes Mellitus: Data of respondents (Table 3) who have stress in their lives

are 30% and those who do not have stress in their lives are 70%. In patients with diabetes mellitus when interviewed, they said that they often think about the disease, so that they feel disturbed according to where various reactions arise after patients know that they have diabetes, ranging from feelings of fear, anxiety, stress, depression, anger, and even rebellion.¹⁹

People with diabetes mellitus have a high level of stress and anxiety, which is associated with treatment that must be followed and the occurrence of serious complications. The stress experienced by sufferers is related to therapeutic or therapeutic regimens that must be undertaken such as diet or eating arrangements, control of blood sugar, consumption of drugs, exercise and other things that must be done throughout his life. In addition, the risk of complications of the disease that can be experienced by the sufferer will also increase stress on the sufferer, which disturbs his quality of life.²⁰

In diabetics, quality of life is the main goal of care, as much as possible good quality of life must be maintained in people with diabetes mellitus. It is because low quality of life and psychological problems can worsen metabolic disorders, either directly through hormonal stress or indirectly through complications.²¹

Conclusion and Recommendation

There are still many people who are not aware of the risk factors for the disease to maintain blood sugar stability for people with diabetes mellitus.

The need for public education is related to the factors that influence the disease and the incidence of diabetes mellitus so that people have a healthy quality of life.

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