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ORIGINAL ARTICLE

The Relationship Between Knowledge and Diet Against the Incidence of Diabetes Mellitus at Dr. Suzie B.A.S Clinic Ciputat Tangerang Selatan

Iin Nurjana Far Far*, Al Asyary

1. Study Program of Public Health Science, the Graduate School, University of Muhammadiyah Prof. Dr. HAMKA, Jakarta, Indonesia
2. Department of Environmental Health, Faculty of Public Health, Universitas Indonesia

*Correspondence to Iin Nurjana Far Far (iinnurjana@gmail.com)
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Abstract

Background: Diabetes mellitus has been the cause of 4.6 million deaths. The International Diabetes Federation (IDF) estimates that as many as 183 million people are unaware that they have DM. Based on preliminary study conducted by researchers, about 50% of patients who went to the dr. Suzie B.A.S Clinic suffers from diabetes mellitus. **Objectives**: The purpose of this research is to find out the correlation between knowledge and diet to the case of diabetes mellitus in dr. Suzie B.A.S Clinic Ciputat Tangerang Selatan 2017. **Method**: The type of this research is analytical with cross sectional approach. This research's variable are knowledge and diet. The data used are primary data based on interview result using questionnaire. Secondary data sourced from examination sheet of diabetes melitus. The number of populations are 1.988 with sample 0f 114 respondents. The technique of collecting samples with quota sampling method. The analysis used is univariate and bivariate analysis (chi square). **Results**: Univariate test results showed that 20.2% of respondents had diabetes mellitus, had knowledge of diabetes mellitus 28,9% bad, and 47,4% respondent had bad diet. In addition, there is a significant correlation between the case of diabetes mellitus with knowledge (Pvalue = 0.013) with PR 2,678, while dietary variables are not associated with the case of diabetes mellitus (Pvalue = 0.603) with PR 1,313. **Conclusion**: This research suggests that Clinic can improve service to patient, especially giving education to patient of diabetes mellitus so that patient better understand about understanding, symptom, and factors causing diabetes mellitus, especially education about diet which can become one of the most influencing factors of the happening of diabetes melitus.

***Keywords**: Diabetes Mellitus, Knowledge, Diet*

Introduction

Non-Communicable Diseases (PTM), including Diabetes, have now become a serious threat to global health. Quoted from WHO 2016 data, 70% of total deaths in the world and more than half the burden of disease. 90-95% of cases of Diabetes are Type 2 Diabetes which is largely preventable because it is caused by an unhealthy lifestyle. According to the International Diabetes Federation-7 2015, in the body's metabolism the hormone insulin is responsible for regulating blood glucose levels. This hormone is produced in the pancreas and then released to be used as an energy source. If the body lacks the hormone insulin, it can cause hyperglycemia (IDF, 2015)

Diabetes mellitus is a cause of hyperglycemia. Hyperglycemia is caused by various things, but hyperglycemia is most often caused by diabetes mellitus. In diabetes mellitus sugar builds up in the blood that it fails to enter the cell. The failure occurs due to insufficient amounts of the insulin hormone or malfunction. The insulin hormone is a hormone that helps the entry of blood sugar (WHO, 2016). World Health Organization (WHO) predicts an increase in the number of people with diabetes who are one of the global health threats. In the world, an estimated 422 million adults are living with diabetes in 2014. Data from the World Health Organization (WHO) shows 80% of people with DM in the world come from developing countries, one of which is Indonesia.

In Indonesia, according to the Basic Health Research Report (Riskesdas 2018) the prevalence of DM sufferers in 2018 (1.5%) remained the same as the prevalence in 2013 (1,5%). Indonesia also faces a situation with the threat of diabetes similar to the world. The International Diabetes Federation (IDF) Atlas 2017 reports that the Diabetes epidemic in Indonesia is still showing an increasing trend. Indonesia is the sixth ranked country in the world after China, India, the United States, Brazil and Mexico with the number of people with diabetes aged 20-79 years around 10.3 million people, (IDF,2017).

In line with this, Basic Health Research (Riskesdas) shows a significant increase in the prevalence of Diabetes, from 6.9% in 2013 to 8.5% in 2018; so the estimated number of sufferers in Indonesia reaches more than 16 million people who are then at risk of other diseases, such as: heart attack, stroke, blindness and kidney failure can even cause paralysis and death.

Diabetes is a global epidemic problem which if not treated immediately seriously will result in an increase in the impact of significant economic losses, especially for developing countries in Asia and Africa. IDF data also shows that the direct costs of

managing diabetes reach more than 727 billion USD per year or around 12% of global health financing. The National Health Insurance Data (JKN) also shows an increase in the number of cases and financing of diabetes services in Indonesia from 135,322 cases with funding of Rp 700.29 billion in 2014 to 322,820 cases with funding of Rp 1,877 trillion in 2017.

Effective efforts to prevent and control diabetes must be focused on risk factors accompanied by regular and ongoing monitoring of its development because the general risk factors of PTM in Indonesia are relatively high, namely 33.5% not doing physical activity, 95% are not consuming fruit and vegetables, and 33.8% of the population over the age of 15 are heavy smokers (Ministry of Health of RI, 2018).

Nationally, the highest prevalence of Diabetes Mellitus is found in DKI Jakarta (2.6%), DI Yogyakarta (2.4%), East Kalimantan (2.3%) and the lowest is in West Sulawesi (0.9%) , Papua (0.8%), and East Nusa Tenggara (0.6%). (Riskesdas 2018). DKI Jakarta is the 17th out of 16 cities in the world as well as being the first city in Indonesia with the highest prevalence of diabetes with an ever-increasing number but still undiagnosed. Undiagnosed due to low public awareness and awareness about diabetes. Obesity is one of the factors in the high rate of diabetes in Jakarta. Besides that, the function of health center (Puskesmas) and *Posbindu* for diabetes mellitus screening is not optimal. Finally, diabetes management is still not optimal, only 30 percent of diabetic patients reach the target of glycemic (carbohydrate substance in blood sugar). Nationally, the highest prevalence of Diabetes Mellitus in 2013 was in the provinces of Central Sulawesi (3.7%), North Sulawesi (3.6.4%), South Sulawesi (3.4%) and the lowest was in the province of West Papua (1.2%), Riau (1.2%), and Lampung (0.8%). (Riskesdas 2013).

According to Suryono (2007), Diabetes Mellitus is a degenerative disease that is strongly associated with diet. Diet is a description of the types, quantities and composition of food eaten every day by someone. Urban lifestyles with diets that are high in fat, salt and excessive sugar cause various diseases including Diabetes Mellitus. Based on the description from the background above, the researcher was interested in examining the relationship between knowledge and eating patterns on the incidence of diabetes mellitus in the clinic of Dr. Suzie B.A.S Ciputat Tangerang Selatan.

Method

This type of research is analytic with cross sectional approach. The variables studied were knowledge and eating patterns. The data used were secondary data

from the results of medical records at Dr. Suzie B.A.S. Clinic. The technique of sample collection was done with total sampling method. The analysis used was univariate and bivariate analysis (chi square).

Results

Univariate Analysis of the incidence of Diabetes Mellitus

The incidence of diabetes mellitus in dr. Suzie BAS Clinic can be known by looking at the results of the examination sheet or laboratory. Then the data processing results can be presented as follows:

Table 1. Distribution of the incidence of diabetes mellitus in patients treated at Dr. Suzie B.A.S Clinic Ciputat Tangerang Selatan

Variables	Freq	%
Incidence of DM		
DM	23	20,2
Non-DM	91	79,8
DM Knowledge		
Low	33	28,9
High	81	71,1
Diet		
Not Good	54	47,4
Good	60	52,6

Based on the table 1, the number of patients without diabetes mellitus (79.8%) is higher than the number of patients with diabetes mellitus (20.2%)..Based on the table it is known that the number of patients with low knowledge on diabetes mellitus (28.9%) is higher than the number of patients with high knowledge about diabetes mellitus (71.1%). Table 1 also shows the percentage of patients with a good diet because they rarely consume foods that trigger diabetes mellitus (high carbohydrate, high sugar and high saturated fat) (52.6%) are more than patients with a bad diet because they often consume foods that trigger diabetes mellitus (high in carbohydrates, high in sugar and high in saturated fats) (47,7%).

Bivariate Analysis

Bivariate analysis was carried out between the dependent variable (the incidence of diabetes mellitus) and the independent variable consisting of knowledge and eating patterns. The statistical test used was the difference test of Chi Square proportions to see whether there is a significant relationship or there is no significant relationship between the dependent variable and the independent variable on the significance limit $\alpha = 0.05$ with the understanding that if the P value is 0.05 then the null hypothesis is rejected or not accepted and the statistical test shows a significant relationship. Whereas if P value > 0.05, the null hypothesis fails to be rejected or accepted and statistically the test shows that there is no significant relationship.

Table 2. Distribution of Respondents Based on the Incidence of Diabetes in Patients Treated at Dr. Suzie B.A.S Clinic Ciputat Tangerang Selatan

Variables	Incidence of DM				Total		Ratio Prevalence (95% CI)	P-value
	DM		Not DM					
	n	%	N	%	n	%		
Knowledge								
Low	12	36,4	21	63,6	33	100	2,678	0,013
High	11	13,6	70	86,4	81	100	(1,315 – 5,452)	
Diet								
Poor	13	24,1	41	75,9	54	100	1,313	0,603
Fair	11	18,3	49	81,7	60	100	(0,643– 2,681)	

Based on the relationship between the incidence of diabetes mellitus with diabetes mellitus knowledge shows the proportion of respondents with diabetes mellitus more who have bad knowledge (36.4%) than respondents who have good knowledge (13.6). Chi Square test results showed a significant relationship between the incidence of diabetes mellitus with knowledge of diabetes mellitus (Pvalue 0.013). The results of the calculation of the prevalence ratio (PR) show that respondents with poor knowledge are 2.678 times more likely to develop diabetes mellitus than respondents with good knowledge (95% CI 1,315-5,452). Based on the table of the relationship between the incidence of diabetes mellitus with diet shows the proportion of respondents with diabetes mellitus more often have a bad diet because they often consume foods that trigger diabetes mellitus (high carbohydrate, high sugar and high saturated fat) (24.1%), than respondents who have a good diet because they rarely consume foods that trigger diabetes mellitus (high in carbohydrates, high in sugar and high in saturated fat) (18.3%). Chi Square test results showed there is no relationship.

Discussion

According to WHO diabetes mellitus is a chronic disease that occurs when the pancreas does not produce enough insulin or the body is ineffective using the hormone insulin that has been produced. This inability results in an increase in blood glucose levels, known as hyperglycemia. It is said diabetes if fasting blood sugar >126 mg/dl or blood sugar when> 130 mg/dl and not diabetes if fasting blood sugar <126 mg/dl or blood sugar when <130 mg/dl.

In this study the dependent variable of the incidence of diabetes can be seen through the results of the examination or laboratory from the clinic. The results of this study indicated that the number of patients with diabetes mellitus amounted to

23 people (20.2%) and patients without diabetes mellitus were 91 people (78,8%).

This is in line with research conducted by Hajji (2015) in Level IV Hospital Kesdam Jaya Cijantung East Jakarta in 2015, where the number of patients with diabetes mellitus was greater with 133 patients (48%), and the number of non-DM patients was 145 patients (52%). The same thing with research conducted by Zuriyanti (2015) at the Tilamuta Health Center in Boalema District, it was found that of the 50 respondents studied, most did not suffer from diabetes mellitus, amounting to 29 respondents (58%), and those suffering from diabetes by 21 respondents (42%).

Diabetes Mellitus Knowledge

Patient's knowledge about diabetes mellitus is a tool that can help sufferers carry out diabetes management so that more and better diabetes mellitus patients know about diabetes mellitus. The patient will increasingly control the condition of the disease so that they can live longer with a good quality of life.

The results showed that the patient who answered the most correctly was the question item about how common symptoms of diabetes mellitus (95.6%), while the patient who answered the most was wrong on the question item about the meaning of the term 3J in eating arrangements in diabetics mellitus (74.6%). This is because patients who seek treatment at the clinic have received general information about the understanding and symptoms of diabetes mellitus from the doctor when on treatment. Meanwhile, patients do not know the term 3J in the dietary regulation of diabetics, due to the lack of education from the media or from the doctor where they seek treatment.

To measure the variable knowledge of diabetes mellitus with the incidence of diabetes mellitus using a research questionnaire, namely 1) Low 2) High. Univariate test analysis results showed that respondents with low knowledge about diabetes mellitus were 33 patients (28.9%), and respondents with high knowledge were 81 patients (71.1%). This is in line with research conducted by Ananda (2013), where respondents with low knowledge are more numerous with 15 patients (54.6%), and respondents with high knowledge are 18 patients (45,4%).

Bivariate test results showed the proportion of patients suffering from diabetes mellitus with low knowledge about diabetes mellitus (36.4%) more than patients who had high knowledge (13.6). Chi Square test results showed a significant relationship between the incidence of diabetes mellitus with knowledge of diabetes mellitus (Pvalue 0.013). The results of the calculation of prevalence ratio (PR) showed that respondents with low knowledge have a 2.678 times higher

chance of developing diabetes mellitus than respondents with high knowledge (95% CI 1,315-5,452).

Various studies have shown that the level of knowledge of people with diabetes mellitus is still low. The results of this study are in line with the results of research conducted by Perdana (2013) which shows patients with good knowledge on average have a controlled blood glucose level (33.4%) thus there is a significant relationship between the level of knowledge with the incidence of diabetes mellitus (Pvalue = 0.001). This is also in line with research conducted by Jazillah (2003) where there is a relationship between knowledge and the incidence of diabetes mellitus. One of the factors controlling diabetes mellitus in people with diabetes mellitus is knowledge. This means that diabetics with good knowledge, their glucose levels tend to be more controlled than patients with poor knowledge (Asriyani, 2013).

However, in contrast to research conducted by Rahmawaty (2010), there is no meaningful relationship between knowledge and the incidence of diabetes mellitus. According to Notoatmodjo in Jazillah (2010) stated that the level of knowledge with the incidence of diabetes mellitus does not guarantee a person behaves in accordance with the knowledge possessed, because of the system of personality, experience, customs held by the individual.

In this study poor knowledge affected respondents to develop diabetes mellitus. Knowledge will make someone have a choice to behave properly or not. Lack of education about diabetes mellitus makes respondents unable to identify the disease being experienced, so no attitude is taken to prevent the occurrence of diabetes mellitus.

Eating Patterns

Eating patterns can be interpreted as a way or habit of settling in relation to food consumption based on the type of food: staple food, sources of protein, fat, vegetables, fruit and based on frequency: daily, weekly, ever and never to maintain health, nutritional status, prevent or help cure diseases (MOH, 2009). Poor diet and nutrition can be a risk factor for various non-communicable diseases (Depkes, 2008).

The results of research conducted showed that the percentage of foods that trigger diabetes mellitus most often consumed by patients is white rice (79.8%), while the food most rarely consumed by patients is soft drinks (56.1%). This can be caused by the fact that white rice is the staple food of the community in general at an affordable price that it is not difficult to get it. Meanwhile, soft drinks are rarely consumed because most respondents are aged over 30 years.

To measure the variable of eating patterns with the incidence of diabetes mellitus using Food Frequency Questionnaire (FFQ), to see a description of the frequency of consumption, the data displayed in the form of the distribution of respondents according to consumption habits whether every day, every week, every month, every year or even never. Existing FFQ data need to be further processed by first changing each consumption frequency into units of the day. After the number of times consumption per day for each respondent has been calculated then categorized, if the value is more than equal to the mean, including the category often or can be said to be not good, whereas if the value is less than the mean, included in the category of sparse or can be said to have a good diet. The cut off point mean is chosen because of its normal distribution. (Gibson, 2005). Univariate test analysis results that have a good diet because they often consume foods that trigger diabetes mellitus (high carbohydrate, high sugar and high saturated fat) (52.6%) more than patients with poor diet because they rarely consume foods that trigger diabetes mellitus (high in carbohydrates, high in sugar and high in saturated fat) (47,4%).

From the results of bivariate analysis showed the proportion of respondents with diabetes mellitus more often have a bad diet because they often consume foods that trigger diabetes mellitus (24.1%), than respondents with a good diet because they rarely consume foods that trigger diabetes mellitus (18.3%). Chi Square test results showed no significant relationship between the incidence of diabetes mellitus with diet (Pvalue 0.603). The results of the calculation of the prevalence ratio (PR) showed that respondents with poor diet have 1,313 times the chance to develop diabetes mellitus than respondents with good diet (95% CI 0,643-2,681).

This is in line with research conducted by Wandansari (2013), which shows that there is no relationship between diet and the incidence of diabetes mellitus (Pvalue = 0.359) with a PR value of 0.359. But not in line with research conducted by Ngaisyah (2015), which said that there is a relationship between diet and the incidence of diabetes, especially the relationship between eating patterns that trigger diabetes mellitus foods such as carbohydrates (Pvalue = 0.035) with a PR value = 7.75.

Conclusions

From the results of research conducted by the researcher on "the relationship of knowledge and diet to the incidence of diabetes mellitus at Dr. Suzie B.A.S Clinic Ciputat, South Tangerang in 2017 "the following conclusions can be drawn: 1) Proportion of incidence of Diabetes

Mellitus at dr. Suzie B.A.S Clinic Ciputat, South Tangerang is a patient who does not have diabetes mellitus (79.8%) and patients who suffer from diabetes mellitus (20.2%); 2) The highest proportion of patient knowledge correctly answers the question items about the general symptoms of diabetes mellitus (95.6%), while the patient who answers the most incorrectly on the question items about the meaning of the term 3J in eating patterns in diabetics (74,6%); 3) The proportion of patients with knowledge about diabetes mellitus (71.1%) is higher than those with low knowledge about diabetes mellitus (28,9%); 4) The proportion of patients with a good diet (52.6%) is higher compared to patients with a bad diet (47.4%); 5) Chi Square test results show that there is a significant relationship between knowledge with the incidence of diabetes mellitus (Pvalue 0.013); and 6) Chi Square test results that show no significant relationship between diet and the incidence of diabetes mellitus (Pvalue 0,603).

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