EDUCATION AND EATING PATTERN AS RISK FACTORS OF DIABETES MELLITUS

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ABSTRACT

Education and eating pattern has significant contributions in determining incident of Diabetes Mellitus. Based on Riskesdas 2013, patient of Diabetes Mellitus who age >15 years increased from 5.7% (2007) to 6.9% (2013). Prevalence of Diabetes Mellitus in east java diagnosed by a doctor at 2.1%. The aim to determine risk factors affecting Diabetes Mellitus. This research was observational study. Subjects were patient of type 2 Diabetes Mellitus in RSD Kalisat who fulfilled inclusion criteria. Research subjects consisted of 40 people. Risk factors patients type 2 diabetes mellitus in the work area of Kalisat hospital Jember regency was in majority 45 years (82.5%), female (62.5%), basic education (77.5%), low levels of knowledge (47.5%), housewives 45%, eating pattern (87.5%), less sport activity (67.5%), less physical activity (55%), overweight (37.5%) and not have the acts of hypertension (55%). Advice: education relation to knowledge needs to be improved, have good eating pattern, and need for regular physical activity.

Keywords: education, eating pattern, diabetes mellitus.

INTRODUCTION

Prevalence of Diabetes Mellitus in Indonesia has increased. Based on the Riskesdas 2013, the number of absolute patients of Diabetes Mellitus age population >15 years in Indonesia increased by 55 % namely 5.7 % in 2007 be 6.9 % (2013). Prevalence of Diabetes Mellitus in east java diagnosed with hiperglicemy by doctor at 2.1 % (Kemenkes RI, 2014). There are trend of increased prevalence of Diabetes Mellitus over the world (Soegondo, 2009). Number of people with Diabetes Mellitus in Indonesia has increased from 8.4 million in 2000 to 21.3 million in 2030. Based on the data from the central statistics (BPS) prevalence of Diabetes Mellitus of 14.7 % in urban area and 7.2 % in a rural so it is estimated the number of people with Diabetes Mellitus in Indonesia in 2030 in urban area as much as 12 million and rural areas of 8.1 million, while in east java province of 37 million population, about 69.018 people suffered Diabetes Mellitus. The amount is a relatively insignificant, but from year to year the number of Diabetes Mellitus increase (Perkeni, 2011).

In the majority of Diabetes Mellitus case is type 2 Diabetic Meliitus caused by heredity, but heredity also not enough to cause Diabetes Mellitus because the the risk is only to 5%, type 2 Diabetes Mellitus more often occur to obesity persons due to lifestyle (Suyono, 2005). Most Diabetisi were unaware that he was under observation by grave danger because the sign and symptom of type 2 Diabetes Mellitus sometimes appears as common sign and symptom, thirst unnatural (polifagi), often urination (poliuri) and weight loss. Appetite fixed reasonable even feel often hungry (polidipsi) (Sustrani *et al.*, 2004). The work area of Puskesmas have highest Diabetes Mellitus number are puskesmas Kasiyan, Curahnongko, Rambipuji, Kalisat. The regional hospital Kalisat (RSD Kalisat) the referral hospitals in regions of eastern parts in Jember regency. The purpose of this research is described the occurrence of the risk factor of Diabetes Mellitus (age, sex, education, knowledge, status of employment, eating pattern, exercise, nutritional status, the acts of hypertension in the work area of RSD Kalisat Jember regency.

METHODOLOGY

The research is observational descriptive. According to time, this research is cross sectional.The research in working areas RSD Kalisat, Jember regency, as much as 40 patients in inclusion criteria: type 2

Diabetes Mellitus type 2, willing to become respondents, age >20 years, able to communicate well. Measurement of nutrition status using BMI (Body Mass Index). Determination of diet using SQFFQ (*Semi Quantitative Food Frequency Questionnaires*).

RESULTS and DISCUSSION

Distribution of risk factors of Diabetes Mellitus (Table 1). Risk factors patients type 2 Diabetes Mellitus in the work area of Kalisat hospital Jember regency was in majority 45 years (82.5%), female (62.5%), basic education (77.5%), low levels of knowledge (47.5%), housewives 45%, eating pattern (87.5%), less sport activity (67.5%), less physical activity (55%), overweight (37.5%) and not have the acts of hypertension (55%). Human physiological changed dramatically is a rapid after age 40 years. Diabetes mellitus often came after someone enters the age of vulnerable especially after age 45 years (Sustrani *et al.*, 2004). Distribution of respondents in this research majority exists range of >45 years of 82,5 % and on the to age <45 years (17,5 %). The data of hospital in Indonesia taken during 40 days by Indonesian Department of Health in 2003 shows people with Diabetes Mellitus who were hospitalized were found the most aged 45-65 years (Wicaksono, 2011). Adult diabetic patients generally 90% including type 2 Diabetes Mellitus. Of these a number of 50% are patients aged >60 years (Gustaviani, 2006). Risk Diabetes Mellitus increase given the rising age, especially after the age of 40 years, because the number of sel-sel beta in the pancreas that produces insulin declines with age (Rochmah, 2006). Several studies epidemiology stated that their level of vulnerability disease Diabetes Mellitus tipe-2 in line with rising age (Perkeni, 2006).

Table 1. Distribution of Risk Factors of Diabetes Mellitus

Risk Factors	**n**	**%**
Age		
- < 45 years old	7	17.5
- ≥ 45 years old	33	82.5
Sex		
- Male	15	37.5
- Female	25	62.5
Education		
- Completing elementary school	31	77.5
- Completing junior/senior high school	3	7.5
- Graduated from higher education	6	15
Knowledge		
- High	8	20
- Moderately	13	32.5
- Low	19	47.5
Status of employment:		
- PNS/TNI/POLRI	6	15
- Private employees	4	10
- Farmers	2	5
- Farmworker	1	2.5
- Enterpreneur	8	20
- Pensionary	1	2.5
- Housewives	18	45
Eating pattern		
- Good	15	37.5
- Not good	35	87.5
Exercise		
- Less	27	67.5
- Good	10	25
- Over	3	7.5
Nutrition Status		
- Underweight	11	27.5
- Normal	6	15
- Overweight	15	37.5
- Low obesity	5	12.5
- Moderate obesity	3	7.5

The acts of hypertension		
- Yes	18	45
- No	22	55
	40	100

Woman risk having higher exposed Diabetes Mellitus compared with men (Budiarto, 2003). After 30 years woman risk having higher than man. Woman of Diabetes Mellitus during pregnancy (gestasional diabetic) risk having higher to infected type 2 Diabetes Mellitus in elderly (Ramaiah, 2006).

The results showed that of 77.5% of the respondents have a basic level of education, finished elementary school and junior high school. Low education can affect the level of knowledge, especially the relationship between food ignorance with health so will effect directly in terms of determining the attitude of choosing food that will be consumed everyday. Education level also determines whether or not a person is easy to understand the nutritional knowledge, affect consumption of nutrients. Even in everyday life is still often seen the existence of families who earn enough, but the food there is less diverse (Moehji, 2002).

Knowledge is one factor that affect on decision making (Syahbudin, 2009). The research results show that the majority of respondents have a low knowledge is as much as 47,5 %. Knowledge to respondents are the knowledge of understanding of Diabetes Mellitus, the causes of, management Diabetes Mellitus, food sources of carbohydrate complex and fibers, indicators control blood glucose levels, type diabetes mellitus, understanding food consumption pattern, and functions pattern setting for eat. Knowledge is the result of know, and this is happening after people do sensing toward an object certain. Sensing occur through human senses, namely the sense of vision, hearing, smell, taste and touch. Most of knowledge is acquired through eyes and ears. Knowledge or cognitive domain is very important in shaping one's actions (Notoatmodjo, 2003). Patients knowledge about Diabetes Mellitus is a means that can help patients run handling Diabetes Mellitus during his life so the more and the better patients understand about diseases the understand how have to change his behavior and why it was necessary (Suyono, 2009). Family knowledge and attitude can influence upon the act of support control blood sugar in people with Diabetes Mellitus (Norhayati, 2006).

The research results show that respondents in place research most of them are housewives, is as much as 45 %. Activities housewives daily now there are many assisted with an instrument more modern as wash with the use of a machine are more likely to be an option the community rather than using the hand or manual. A number of studies has shown that one who has less lifestyle may have diabetes mellitus than those who in active lives (Ramaiah, 2006).

The research results show that the majority of respondents food consumption pattern that is not good (87.5 %). One factors caused of Diabetes Mellitus is life style are not healthy food consumption pattern and lack of exercise. Food consumption pattern in community is shifting from the traditional to modern food consumption pattern. In modern food consumption pattern there is a tendency to pick food that high in carbohydrates and low fat but low fibers such as fast food that much offered in the market. Consumption of foods high energy and high fat, and low physical activity, will change the balance energized with he kept as energy savings rarely used.

Excessive intake energy will increase retention insulin and could overweight and if its left continues will cause obesity. This matter which could a lot of problem in health and increase someone suffered from a degenerative disease as Diabetes Mellitus (Gibney et al., 2005). In addition undernourished or overweight equally increases the risk of affected by Diabetes Mellitus. Underweight detrimental to the pancreas, while obesity resulting in interference work of insulin (insulin retention). Undernutrition can occur during pregnancy, childhood, and at adult age due to tight diet (Sustrani *et al.*, 2004).

The results showed that most respondents has less physical activities (67.5%). Regularly exercise (continuous activity at least 20-30 minutes and done at least 3-4 days a week) improve insulin sensitivity and glucose tolerance in individuals. Physical activity affect weight loss in overweight and obesity person. To be fixed and physically fresh, suitable for sufferers of Diabetes Mellitus, but this individual has to work out under the supervision of a doctor (Sutedjo, 2010).

Physical activity have the effect that is favorable to metabolism of carbohydrates in diabetisi and those who are not diabetisi. Physical exercise also have the effect that is favorable to metabolism of fats and in reduction of weight (Gibney et al. , 2005). Physical exercise carried out more long it will caused the breakdown of fats in the form of triglycerides and cholesterol. High cholesterol cause narrowing of blood vessels (Soeharto, 2004). Sports activity <3 times/week for 30 minutes show the risk of Diabetes Mellitus higher than in routine sports activity. Less sports contrastive prevalence of Diabetes Mellitus tipe-2 to 2-4 times (Wicaksono, 2011).

Obesity are main risk factors to come Diabetes Mellitus. The rate of obesity which is measured by body mass index (BMI) was related closely by glucose intolerance in urban and rural population. Although they are still be within a weight that can be accepted, but can increases the risk of Diabetes Mellitus (Gibney et al., 2005). The research results show that the majority of respondents including on the overweight criteria with the percentage of 37,5 %. One who has excessively fat in the body especially in the abdomen, more have Diabetes

Mellitus that does not insulin dependent (NIDDM). This is because fat in abdominal organs appears to be more easily processed to gain energy, the fatty acids in the blood increased. The high fatty acids in the blood increase resistance to insulin through its action against their hearts and the muscles of the body (Ramaiah, 2006).

The statistics show that 70% of the total Diabetes Mellitus patients was having a heavy body excess (obesity) (Harison, 2000). Obesity was the main factor of incident type 2 Diabetes Mellitus. Danish research describing the spread of obesity in new patients being diagnosed type 2 Diabetes Mellitus reaches 80%, where the spread of obesity against the background of a population that have same age is about 40% (Wicaksono, 2011).

The research results show that the majority of respondents have no complications with hypertension much as 55%. Hypertension patients that should not consume salt so change in sweet food will cause disease diabetes mellitus. A person who has the acts of hypertension more risky exposed to tipe-2 Diabetes Mellitus compared to a person who lacks the acts of hypertension although it is not statistically significant. This is in accordance with previous studies that shows that an individual on hypertension 2.5 times more often risk than tipe-2 Diabetes Mellitus with normotensi (Wicaksono, 2011).

CONCLUSION

Risk factors patients type 2 Diabetes Mellitus in the work area of Kalisat hospital (RSD Kalisat) Jember regency was in majority 45 years (82.5%), female (62.5%), basic education (77.5%), low levels of knowledge (47.5%), housewives 45%, eating pattern (87.5%), less sport activity (67.5%), less physical activity (55%), overweight (37.5%) and not have the acts of hypertension (55%). Advice: education relation to knowledge needs to be improved, have good eating pattern, and need for regular physical activity.

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