The 4th International Conference on Nursing and Public Health (ICONPH)

Eating Patterns of the Elderly With the Incident of Diabetes Mellitus in the Posyandu Elderly, Prunggahan Wetan Village, Semanding, Tuban District

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ABSTRACT
Diabetes mellitus is a chronic disease commonly known as high blood sugar. Prevent diabetes mellitus by changing lifestyle, regulating diet, and maintaining normal weight. WHO (World Health Organization) states that 422 million people in the world suffer from diabetes mellitus, an increase of up to 8.5% in the population of older people. This study aimed to determine the relationship between elderly eating patterns and the incidence of diabetes mellitus in the elderly posyandu, Prunggahan Wetan village, Semanding sub-district, Tuban regency. Correlational research design. The population in this study was all 40 elderly people who actively participated in posyandu activities for the elderly. The sampling technique used was total sampling. The independent variable is the elderly's diet. The dependent variable is the incidence of diabetes mellitus. Data were collected using questionnaires and interviews, and then data processing and statistical analysis were carried out using the Chi-Square test. The research showed that almost all (67.5%) of the elderly had a good diet category, and a small number of elderly (10%) suffered from diabetes mellitus. After carrying out the Chi-Square test between the pattern of elderly people and the incidence of diabetes mellitus, the P-value = 0.001 was obtained, where the P-value < α (0.05). This shows a relationship between the diet of elderly people and the incidence of diabetes mellitus. Efforts to reduce the incidence of diabetes mellitus can be carried out by health workers by providing routine health education once a month during posyandu activities regarding regulating diet by adjusting the amount, type, and frequency according to age.

Keywords: Diet, Diabetes Mellitus, Elderly

INTRODUCTION

Diabetes mellitus is a health problem that is considered important and one of the four priority non-communicable diseases in the world because it is a chronic disease that is currently the target of management by world leaders [1]. Diabetes mellitus cases always increase every year, the causes include age, diet, lifestyle, and lack of physical activity [2].

According to WHO (World Health Organization), in the world 422 million people are suffering from diabetes mellitus, an increase of up to 8.5% in the population of older people and it is estimated that there are 2.2 million deaths due to diabetes mellitus that occur before the age of 70 years, especially in countries develop. It is estimated that it could continue to grow to 600 million people by 2035 [3]. The number of diabetes mellitus sufferers in Indonesia from 2019 was 10.7 million, increasing to 19.5 million in 2021. In 2022 Indonesia will be ranked fifth with the highest number of diabetes mellitus in the world compared to last year's ranking of seventh [4]. According to 2018 Riskesdas data, an increase in the prevalence of diabetes mellitus sufferers in the elderly was recorded at 6% in 2013 to 6.3% in 2018 (Riskesdas, 2018). The highest number of DM sufferers according to age

occurs in the age groups 55-64 years and 65-74 years [5]. East Java is one of the provinces that has experienced a fairly high increase in DM sufferers, recorded as many as 732,124 sufferers in 2019, an increase in 2020 of 843,521 sufferers [6].

Factors influencing diabetes mellitus include obesity, diet, age, pre-diabetes, and family history. Regarding the age factor, elderly people are at risk of developing type 2 diabetes mellitus as they get older, especially those aged 45 years and over. This is due to a lack of physical activity which causes loss of muscle mass and increases body weight with age [8]. According to Suyono (2007), type II DM is closely related to diet. Diet is an effort to regulate the amount and type of food consumed. A fast-paced lifestyle leads a person to have a pattern of excessive consumption of fat, salt, and sugar resulting in various diseases including diabetes mellitus [9].

Diabetes Mellitus is known as The Silent Killer because sufferers often do not realize it and are discovered when they experience complications, both acute and chronic [10]. DM complications can include heart attacks and strokes, severe leg infections (gangrene) amputations, and end-stage kidney failure [11]. Changes in lifestyle in Indonesian society along with changing times have caused changes in natural eating patterns to become instantaneous. This leads to people's habits of eating patterns that are high in fat, cholesterol, salt, and sugar, liking ultra-processed food and eating outside/restaurants which can result in high blood sugar so that there is a risk of diabetes complications [12]. According to P2PTM Ministry of Health of the Republic of Indonesia (2022) controlling diabetes mellitus is done by regulating diet. The most common eating pattern is 3J, namely the amount of food, type of food and food schedule. The amount of food consumed is adjusted to the weight of the sufferer who feels comfortable, the type of food consumed is arranged according to the

Model T Dinner Plate concept, for a meal schedule of 3 main meals and 2-3 snacks following the principle of small portions [13]. The government is also trying to overcome problems related to diabetes mellitus, focusing on promotive and preventive curative and rehabilitative control programs. For this reason, prevention and treatment of DM needs to be optimized through preventive efforts in the form of screening services included in one of the minimum service standard (SPM) programs in the health sector which is an indicator of health services aged 15-59 years [14].

RESEARCH METHOD

Correlational research design. The entire population of 40 elderly people actively participates in elderly posyandu activities. The sampling technique uses total sampling. The independent variable is the elderly's diet. The dependent variable is the incidence of diabetes mellitus. Data were collected using questionnaires and interviews, and then data processing and statistical analysis were carried out using the Chi-Square test.

RESULT AND DISCUSSION

Table 1. Characteristics of the elderly based on age, gender, occupation, education, and BMI at the Posyandu for the Elderly in Prunggahan Wetan Village in May 2024

Age	Frequency (F)	Percentage (%)
60 - 70 years	32	80%
71 – 90 years	7	17,5%
>90 years	1	2,5%
Total	**40**	**100%**
Gender		
Male	8	20%
Female	32	80%
Total	**40**	**100%**
Job Self		
Employed	3	7.5%
Farmer	3	7.5%
Unemployed	34	85%

Total	40	100%

Education		
College	2	5%
High School	8	20%
Middle	7	17.5%
School	19	47.5%
Elementary	4	10%
School		
No School		
Total	**40**	**100%**

Category BMI	Frequency (F)	Percentage (%)
Skinny	12	30%
Normal	22	55%
Fat	1	2.5%
Obesity	5	12.5%
Total	**40**	**100%**

Based on Table 1, it can be seen that almost all of them are elderly, 80% of whom are female, the majority are aged 60-70 years, almost half of them, 47.5%, have at least elementary school education, almost all of them, 85% of elderly people, do not work. The majority of them, 55%, have a BMI (Body Mass Index) normal.

Table 2. Dietary Patterns of the Elderly at the Elderly Posyandu in Prunggahan Wetan Village in May 2024

Dietary	Frequency (F)	Percentage (%)
Good	27	67.5%
Not Good	13	32.5%
Total	**40**	**100%**

Based on Table 2, it is known that the majority of elderly people, 67.5%, have a good diet category.

Table 3. Incidence of Diabetes in the Elderly at the Elderly Posyandu in Prunggahan Wetan Village

Incident of DM	Frequency (F)	Percentage (%)
Diabetes Mellitus	4	10%
Not Diabetes Mellitus	36	90%
Total	**40**	**100%**

Based on Table 3, it is known that a small percentage of 10% of elderly people are diagnosed with diabetes mellitus.

Table 4. Cross-tabulation of elderly eating patterns with the incidence of Diabetes Mellitus at the elderly posyandu in Prunggahan Wetan Village in May 2024

	Incident of Diabetes Mellitus						P value
	Diabetes Mellitus		**Not Diabetes Mellitus**		**Total**		
Dietary	F	%	F	%	F	%	
Good	0	0%	27	100%	27	100%	0,001
Not Good	4	30%	9	70%	13	100%	
Total	**4**	**10%**	**36**	**90%**	**40**	**100%**	
The Chi-Square test obtained p-value = 0.001, so p value < 0.05							

In Table 4.4 it is known that elderly people who are not diagnosed with DM have a good diet, namely 100%, but the majority of elderly people who are not diagnosed with DM have a bad diet, namely 70%, all elderly people who are diagnosed with diabetes mellitus have an unhealthy eating pattern. Good. From the results of the Chi-Square statistical test, it was obtained that p-value = 0.001, which, when compared with the value of α = 0.05, means that p-value < 0.05 is smaller than α = 0.05, indicating that there is a relationship between elderly diet and the incidence of diabetes mellitus.

Characteristics of the Elderly (Age, Education Level, Occupation, Gender and BMI)

Based on research, the characteristics of the elderly based on age are almost all between 60-70 years, while the level of education is almost half of those with a primary school education, the majority of elderly people do not work and the majority

have normal BMI (Body Mass Index) values.

Quoted by Johanna and Lamtiur in their book about elderly nutrition, the characteristics of the elderly include: according to Burhan (2013), it is characterized by a decrease in the function of the body's organs, making it susceptible to acute and chronic diseases. Apart from that, elderly people also often experience physical weakness and find it difficult to carry out daily activities independently due to illness. As a person's age increases, their health problems become more complex [15].

According to Lestari in Wiryawan (2020), the level of education is an activity that develops abilities, attitudes, and good behavior for future life [16]. Apart from that, a person's job determines a person's income. Income is the result obtained from a job in the form of money or services from someone within a specified period [17].

BMI is a measure to determine whether a person is overweight or not through body weight in kilograms divided by the square of height in meters (Kg/m2). BMI can change during childhood and adolescence. BMI changes based on age and differs between men and women [18]. An increased BMI is also a major risk factor for chronic diseases such as stroke, hypertension, diabetes mellitus, bone and muscle disorders, and malignancies [19].

Based on the description above, food consumption is influenced by a person's level of education due to thought patterns and experiences. The higher a person's education level, the better the quality of the food chosen compared to a low education level. Someone with higher education will choose foods that contain high levels of nutrition according to the food available.

Apart from that, work determines a person's income so that according to the type of food consumed and how much is spent to buy food, a high level of income influences the fulfillment of balanced nutrition, the greater the income, the better the nutritional consumption that is applied

compared to low income. Likewise, the age factor greatly influences a person's health status, so it is necessary to pay attention to nutritional needs according to age to maintain a healthy body and avoid the risk of disease.

Obesity is more at risk in women than in men. This is due to differences in energy intake and physical activity. In addition, women have more fat mass than men. Elderly people with a normal body weight have a lower risk of developing metabolic diseases that are difficult to cure. The better a person's BMI value, the smaller a person's risk of developing diabetes mellitus.

Dietary Patterns of the Elderly at the Elderly Posyandu in Prunggahan Wetan Village

Based on research results, almost half of the elderly who have bad eating patterns are less than the elderly who have good eating patterns.

The diet of the elderly has 3 important components, namely the type, frequency and amount of food, which needs to be taken into account to provide adequate nutrition to fulfill the cell replacement process in the body, help the aging process, and slow down the onset of biological age [20]. Diet is a food consumption habit that greatly influences nutritional status. Consuming sufficient, high-quality food and paying attention to the type of food according to the balanced nutrition needed by the body can achieve optimal nutritional conditions [21].

Diet has a big influence on diabetes mellitus. Consuming habits high in fat, cholesterol, salt, sugar, can increase blood sugar levels, resulting in a high risk of diabetes mellitus [8].

Based on the description above, consuming excessive amounts of food that is high in sugar and fat can result in diabetes mellitus. Good diet management can be achieved by paying attention to the amount of sugar, carbohydrates, and fat consumed, adjusting food portions by adjusting the amount, type, and frequency according to age, and getting used to consuming foods

high in fiber such as fruit and vegetables. Apart from that, paying attention to correct cooking techniques such as replacing the habit of cooking food with frying techniques can be replaced with steaming, boiling, sautéing and grilling.

Incidence of Diabetes Mellitus in Posyandu for the Elderly in Prunggahan Wetan Village

Based on research results, a small number of elderly people were diagnosed with diabetes mellitus at the Prunggahan Wetan Village Elderly Posyandu, and the rest were elderly people who suffered from other non-communicable diseases such as hypertension, gout, stroke, and cholesterol. Elderly people who suffer from Diabetes Mellitus in elderly posyandu are caused by having poor eating patterns.

Diabetes mellitus (DM) is a chronic, progressive disease in which the body is unable to metabolize fats, carbohydrates, and proteins, resulting in hyperglycemia (high blood glucose levels). The cause is insulin secretion or action, metabolic abnormalities that interfere with insulin secretion, mitochondrial abnormalities, and a group of other conditions that interfere with glucose tolerance. [22]. Several genetic factors including obesity, diet, age, pre-diabetes, and hereditary history often cause diabetes. These factors cause diabetes as well as complications such as microvascular complications, damage to the nervous system and kidney system, and even eye damage [23].

Based on the description above, the incidence of diabetes mellitus is caused by age and diet. The age factor cannot be modified, so you need to pay attention to the amount, type and frequency of food according to age. In old age, the body experiences a decline in the functioning of the body's internal organs. The habit of consuming foods high in sugar and fat in old age causes elderly people to be at high risk of developing diabetes mellitus and if left untreated, this will result in various complications.

The relationship between elderly eating patterns and the incidence of Diabetes Mellitus at the Posyandu for the Elderly in Prunggahan Wetan Village

The results of this study show that a small percentage of elderly people have poor eating patterns with the incidence of diabetes mellitus being 4 elderly people (10%). This is supported by the chi-square results which show that the value of p = 0.001 is smaller than α = 0.05, this shows that there is a relationship between the diet of the elderly and the incidence of diabetes mellitus in the posyandu for the elderly in Prunggahan Wetan Village, Semanding District. So elderly people with poor eating patterns have a higher risk of experiencing an increase in diabetes mellitus compared to elderly people who have good eating patterns.

Diet is a food consumption habit that greatly influences nutritional status. Consuming sufficient, high-quality food and paying attention to the type of food according to the balanced nutrition needed by the body can achieve optimal nutritional conditions [21]. Diabetes mellitus (DM) is a chronic, progressive disease in which the body is unable to metabolize fats, carbohydrates and proteins, resulting in hyperglycemia (high blood glucose levels). The cause is insulin secretion or action, metabolic abnormalities that interfere with insulin secretion, mitochondrial abnormalities, and a group of other conditions that interfere with glucose tolerance [22].

Several genetic factors including obesity, diet, age, pre-diabetes, and hereditary history often cause diabetes. These factors cause diabetes as well as complications such as microvascular complications, damage to the nervous system and kidney systems, and even eye damage [23].

Based on the description of the data and theory above, the diet of the elderly is related to the incidence of diabetes mellitus. The habit of consuming excess sugar and not paying attention to nutrition carries a high risk of developing diabetes mellitus,

especially in old age, where you need to adjust your diet according to your age.

CONCLUSION

Based on the results of research conducted at the elderly posyandu in Prunggahan Wetan Village, the following conclusions can be drawn. Almost all elderly people are aged 60-70 years, almost half of them have elementary school education and almost all of them have normal BMI values. Almost all of the elderly in the elderly posyandu in Prunggahan Wetan Village have a good diet. A small percentage of elderly people suffer from diabetes mellitus. There is a relationship between the diet of the elderly and the incidence of diabetes mellitus in the posyandu for the elderly in the village of Prunggahan Wetan.

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