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The Correlation of Diabetes Mellitus Patients Background with Levels of Self-Management Application in At Depok General Hospital

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Abstract: Diabetes Mellitus is a chronic disease in the form of metabolic disorders indicated by blood sugar levels that exceed normal limits which can cause death worldwide. Self-management in patients with diabetes mellitus is the behavior of individuals with diabetes mellitus to manage their condition, including taking medication, adjusting diet, carrying out physical exercise, monitoring blood glucose independently, and maintaining foot care. Diabetes mellitus was included in the top 10 diseases that caused death in Depok city hospitals in 2019 with 69 new cases (5.2%). Therefore, it is important to know whether or not there is a relationship between the background of people with diabetes mellitus and the level of self-management implemented by people with diabetes mellitus. This study uses descriptive analytic method with a cross sectional approach with a sample of 95 respondents. Data were collected using a questionnaire. The results showed that there was no relationship between age and the level of application of self-management in patients with diabetes mellitus at RSUD Kota Depok with value = 0.299, ($\rho > \alpha$), there was no relationship between gender and the level of application of self-management in patients with diabetes mellitus. at the Depok City Hospital with value = 0.687, ($\rho > \alpha$), there is no relationship between the level of education and the level of self-management Application in diabetes mellitus patients at the Depok City Hospital with value = 0.359, ($\rho > \alpha$), and no there is a relationship between the duration of suffering from diabetes mellitus with the level of self-management Application in diabetes mellitus patients at the Depok City Hospital with value = 0.723, ($\rho > \alpha$).

Keywords–*diabetes mellitus, background, self-management*

I.   INTRODUCTION

Metabolic disorders indicated by high blood sugar levels are the definition of diabetes mellitus and this is a serious matter in the world of health. Diabetes mellitus is a major cause of death globally, but is a major trigger for blindness, heart disease, and kidney failure.[1] Diabetes mellitus is dubbed the "silent killer" because it is a disease that kills the sufferer silently. Many people with diabetes mellitus are not aware that they have the disease, and complications have occurred when the patient just found out that he had diabetes mellitus.[2]

In 2019 the International Diabetes Federation (IDF) predicts that there are 463 million people in the world with diabetes at the age of 20-79 years and this will increase to 578 million in 2030. Indonesia is in the seventh highest position with 10.7 million people with diabetes mellitus.[3] According to the Depok City Health Office, diabetes mellitus ranks first in the pattern of non-communicable diseases in the city of Depok with 23,188 cases (16.51%). Diabetes mellitus is also included in the top 10 diseases that cause death in Depok city hospitals in 2019 with the number of new cases as many as 69 people (5.2%).[3]

Prevention and control of diabetes mellitus should be focused on risk factors accompanied by regular monitoring and development. Because non-communicable diseases (NCDs) in Indonesia are still relatively large, namely 33.5% do not carry out physical activity, 95% do not consume fruits and vegetables, and 33.8% of the population aged over 15 years are heavy smokers. Physical effects commonly experienced by diabetics include changes in body weight, changes in appetite, fatigue, difficulty sleeping, while the psychological effects felt are stress, anxiety, fear, feeling sad, helpless, useless, feeling helpless. there is hope and hopelessness stress.[5,6]

The main cure for diabetes mellitus is to change your lifestyle by controlling a healthy and balanced diet. The Application of the diet is one of the most important aspects in the successful management of diabetes mellitus, but there are times when it becomes an obstacle because it requires compliance and motivation from people with diabetes mellitus themselves. Based on PERKENI there are four pillars of diabetes mellitus management, namely education, medical nutrition therapy, physical exercise, and drug intervention.[7] The purpose of the management of diabetes mellitus is to improve the quality of life of people with diabetes mellitus. Self-management is behavior that is centered on character and individual responsibility in managing the disease.[8] Self-management in patients with diabetes mellitus is the action of individuals with diabetes mellitus to control their condition, including taking medication, regulating diet, doing physical exercise, checking blood glucose independently, and maintaining foot care.[9]

II.   LITERATURE REVIEW

In the context of compiling this research, before conducting further research, it becomes a scientific work, therefore the first step for researchers is to review previous research that discusses the application of self-management in patients with diabetes mellitus. some of the results of this study to be able to know that what the author studied was not the same as previous studies which showed differences in each study.

The first research of Hidayah's showed that the status of self-management of diabetes mellitus in terms of physical activity, self-care and monitoring of blood sugar levels showed a lack of self-management status. The lack of self-management is caused by various factors such as the condition of respondents in the elderly group which results in a lack of ability to do physical activity, respondents who monitor blood sugar on the doctor's initiative, not from individual awareness, so that patients feel compelled to check their blood sugar when the doctor recommends or when body condition is not normal / sick.[10]

The results of the research by Windani et al explained that as many as 97.1% of diabetes mellitus patients did moderate diabetes mellitus Self-Management. The majority of respondents are female, moderate level of self-management is caused because women tend to carry out risky behaviors for the occurrence of diabetes mellitus such as lack of physical activity, obesity, and experiencing diabetes mellitus during pregnancy.[11]

Based on the research of Kurniawan et al participants who are over 65 years old, unmarried, have basic education and have complications get low self-management results. This low self-management can be associated with complications of heart disease for sufferers which makes self-management more difficult to carry out.[12] Reyes found diabetes mellitus patients who had difficulty controlling their disease. Because, in addition to diet to monitor diabetes mellitus and control blood sugar, patients must also follow a diet and regulate activity patterns and other activities that can interfere with heart disease that conflict with each other.

According to research by Luthfa & Fadhilah it shows that most participants with good self-management skills can improve the quality of life of people with diabetes mellitus. Diabetes mellitus is a chronic disease, with long-term effects on mental and social and physical aspects. In other words, there is a relationship between self-management and quality of life. Consistent self-management can help patients regulate blood sugar, minimize complications, and improve their quality of life. Inappropriate self-management is a common cause of poor quality of life in diabetic patients, with impacts on physical, mental health and relationships with the environment.[13,14]

III.   METHODOLOGY

This study uses an analytically analyzed observation method in which information collection is carried out in a cross sectional manner, and this study allows researchers to observe and measure variables at a certain time. The method used is a survey method using a questionnaire as a tool to collect information. This study will examine the relationship between the background of people with diabetes mellitus and the level of self-management in patients with diabetes mellitus. In this study, the population that will be used is diabetes mellitus patients in Depok City Hospital with a sample of 95 respondents.

IV.   RESULT

Table 1: Distribution of Respondents by Age in Depok City Hospital in 2022

Age	Frequency	Percentage (%)
< 60 years	42	44,2
≥ 60 years	53	55,8
Total	95	100,0

The distribution of respondents based on age at RSUD Kota Depok there were 95 respondents with 42 respondents (44.2%) aged under 60 years, and 53 respondents (55.8%) aged over 60 years.

Table 2: Distribution of Respondents by Gender in Depok City Hospital in 2022

Gender	Frequency	Percentage (%)
Male	33	34,7
Female	62	65,3
Total	95	100,0

Table 2 describes the gender in the Depok City Hospital there are 95 respondents with 33 respondents (34.7%) being male and 62 respondents (65.3%) being female.

Table 3: Distribution of Respondents based on Education Level in Depok City Hospital in 2022

Education	Frequency	Percentage (%)
Not Completing Elementary School	7	7,4
SD/Equivalent	23	24,2
SMP/ Equivalent	23	24,2
SMA/Equivalent	30	31,6
Academy/University	12	12,6
Total	95	100,0

Distribution of respondents based on education at RSUD Kota Depok there were 95 respondents with 7 respondents (7.4%) not completing elementary school, 23 respondents (24.2%) having the last education of SD/equivalent, 23 respondents (24.2%) having the last education of SMP/ Equivalent, and 30 respondents (31.6%) with the latest high school education/equivalent and 12 respondents (12.6%) with the latest education in Academy/University.

Table 4: Distribution of Respondents by Occupation at the Depok City Hospital in 2022

Occupation	Frequency	Percentage (%)
Not Working	29	30,5
Laborer	2	2,1
Entrepreneur/Trader	6	6,3
Private Employees	10	10,5
Pns	3	3,2

Housewive	45	47,4
Total	95	100,0

Distribution of respondents based on occupations at RSUD Kota Depok there were 95 respondents with 29 respondents (30.5%) not working, 2 respondents (2.1%) having work as laborers, 6 respondents (6.3%) working as entrepreneurs/traders, 10 respondents (10.5%) worked as private employees, and 3 respondents (3.2%) worked as civil servants and 45 respondents (47.4%) as housewives.

Table 5: Distribution of Respondents by Length of Suffering from Diabetes Mellitus in Depok City Hospital in 2022

Length of Suffering from Diabetes Mellitus	Frequency	Percentage (%)
≤ 5 years	42	44,2
> 5 years	53	55,8
Total	95	100,0

The distribution of respondents based on the duration of suffering from diabetes mellitus at the Depok City Hospital there were 95 respondents with respondents suffering from diabetes mellitus less than 5 years as many as 42 respondents (44.2%), and respondents who had suffered from diabetes mellitus > 5 years as many as 53 respondents (55, 8%).

Table 6: Distribution of Respondents based on the Application of Self-Management on Diabetes Mellitus in Depok City Hospital in 2022

Application of Self-Managemen	Frequency	Percentage (%)
Good Category	5	5,3
Enough Category	84	88,4
Not Enough Category	6	6,3
Total	95	100,0

Distribution of respondents based on the application of self-management of diabetes mellitus in Depok City Hospital there were 95 respondents. A total of 5 respondents (5.3%) applied self-management in the good category of diabetes mellitus, 84 respondents (88.4%) applied self-management to diabetes mellitus with enough category, while 6 respondents (6.3%) applied the not enough category.

Table 7: Average Values based on the Application of Self-Management on Diabetes Mellitus in Depok City Hospital in 2022

Questionnaire indicators	Mean	Median	Mode	SD	Min	Max
Diet Control	6,40	6,00	6	1,483	3	11
Physical Activity	2,88	3,00	2	1,210	1	8
Utilization of Health Service	4,83	5,00	6	1,200	2	7
Blood Sugar Management	8,99	9,00	9	1,125	5	11

Table 7 illustrates the highest average value of the application of self-management, namely blood sugar management with a value of 8.99 and the lowest average value of physical activity with a value of 2.88.

Table 8: Distribution of Respondents by Age and Level of Self-Management Application of Diabetes Mellitus in Depok City Hospital in 2022

Age	Application of *Self-Managenet*						Total		ρ value
	Good		Enough		Not Enough				
	∑	%	∑	%	∑	%	∑	%	

< 60 years	1	2,4	37	88,1	4	9,5	42	100,0	0,299
≥ 60 years	4	7,5	47	88,7	2	3,8	53	100,0	
Total	5	5,3	84	88,4	6	6,3	95	100,0	

Table 8 describes from 95 respondents, in the category of adults and the elderly that the Application of self-management for diabetes mellitus is mostly in the not enough category with 37 respondents (88.1%) and 47 respondents (88.7%). The results of statistical tests using Chi Square have a probability value (0.299) greater than the standard significant 0.05 or (ρ > α), meaning that Ho fails to be rejected or Ho is accepted, that is, there is no relationship between age and the level of self-management of diabetes mellitus. at the Depok City Hospital.

Table 9: Distribution of Respondents by Gender and Level of Self-Management Application of Diabetes Mellitus in Depok City Hospital in 2022

Gender	Application of *Self-Managenet*						Total		ρ value
	Good		Enough		Not Enough				
	∑	%	∑	%	∑	%	∑	%	
Male	2	6,1	28	84,8	3	9,1	33	100,0	0,687
Female	3	4,8	56	90,3	3	4,8	62	100,0	
Total	5	5,3	84	88,4	6	6,3	95	100,0	

Table 9 describes from 95 respondents with male and female gender that the Application of self-management for diabetes mellitus is mostly in the not enough category with 28 respondents (84.8%) and 56 respondents (90.3%). The results of statistical tests using Chi Square have a probability value (0.687) greater than the standard significant 0.05 or (ρ > α), meaning that Ho is accepted, that is, there is no relationship between gender and the level of self-management Application of diabetes mellitus in the City Hospital. Depok.

Table 10: Distribution of Respondents by Education Level and Level of Self-Management Application of Diabetes Mellitus in Depok City Hospital in 2022

Education	Application of *Self-Managenet*						Total		ρ value
	Good		Enough		Not Enough				
	∑	%	∑	%	∑	%	∑	%	
Low Education	3	5,7	45	84,9	5	9,4	53	100,0	0,359
Higher Education	2	4,8	39	92,9	1	2,4	42	100,0	
Total	5	5,3	84	88,4	6	6,3	95	100,0	

Table 10 illustrates that from 95 respondents with low education and higher education, the Application of self-management for diabetes mellitus is mostly in the not enough category with 45 respondents (84.9%) and 39 respondents (92.9%). The results of statistical tests using Chi Square have a probability value (0.359) greater than the significant standard of 0.05 or (ρ > α), meaning Ho is accepted, that is, there is no relationship between education and the level of self-management Application of diabetes mellitus in Depok City Hospital. .

Table 11: Distribution of Respondents by Length of Suffering from Diabetes Mellitus and Level of Self-Management Application of Diabetes Mellitus in Depok City Hospital in 2022

Length of Suffering from Diabetes Mellitus	Application of *Self-Managenet*						Total		ρ value
	Good		Enough		Not Enough				
	∑	%	∑	%	∑	%	∑	%	
≤ 5 years	3	7,1	36	85,7	3	7,1	42	100,0	0,723
> 5 years	2	3,8	48	90,6	3	5,7	53	100,0	
Total	5	5,3	84	88,4	6	6,3	95	100,0	

Table 11 illustrates that of the 95 respondents who had long suffered from diabetes mellitus, the Application of self-management for diabetes mellitus was mostly in the not enough category with 36 respondents (85.7%) and 48 respondents (90.6%). The results of statistical tests using Chi Square have a probability value (0.723) greater than the standard significant 0.05 or ($\rho > \alpha$), meaning that Ho is accepted, that is, there is no relationship between the length of suffering from diabetes mellitus and the level of self-management of diabetes mellitus in Indonesia. Depok City Hospital.

V.   DISCUSSION

One of the factors causing diabetes mellitus is the age factor, based on the results of research conducted on diabetes mellitus patients at the Depok City Hospital, it was found that half of the respondent's population had entered the elderly category. The results of this study are supported by research by Huang, et al because the average age of the respondent is 59.40 years can be at risk . This is in line with what Yusra, (2011) explained where age is an important risk factor for diabetes mellitus because it reduces pancreatic cell function and insulin secretion, so that someone who is older has a higher risk of developing diabetes mellitus.[15,16]

The results showed that the majority of women suffer from diabetes mellitus compared to men. This is in line with the research of Windani et al which showed the prevalence of diabetes mellitus in the majority occurred in women compared to men.[11] Risk factors that cause high diabetes mellitus in women are obesity, lack of activity, age, and having a history of diabetes mellitus.[17]

Based on the results of the study, 53 respondents (55.8%) did not finish elementary, elementary, and junior high schools, while 42 respondents (44.2%) had high school and college education. This is in line with the opinion of Huang et al that patients with higher education levels have a more positive attitude towards diabetes mellitus and tend to achieve better blood glucose control.[15]

The results showed that the majority of diabetes mellitus patients in Depok City Hospital had jobs as housewives as many as 45 respondents (47.4%) and 29 respondents (30.5%) who did not work. This is in line with Fuadi's research, that most of the respondents did not work with 23 people (29.5%). The type of work can also affect a person affected by diabetes mellitus in terms of the physical activities carried out.[18] Puspitasari explained in his research that lack of exercise and having an unhealthy lifestyle were factors for suffering from diabetes mellitus.[19]

From the results of the study, the average length of suffering from diabetes was 9.41 years. This is in line with Puspitasari's research that the average length of suffering is 7.21 years.[19] This is also in line with what Thenmozi and Vijayalaksmi said, the length of suffering from diabetes mellitus is divided into 3 categories, 1 to 5 years of short duration, 6 to 10 years of medium duration and more than 10 years of long duration. The longer the patient suffers from diabetes mellitus, the better his knowledge will be. Patients are able to respond to the disease and care about their health. So that patients will be diligent in their treatment and desire to improve their self-management.[20,21]

Based on the results of research that has been carried out on diabetes mellitus patients at the Depok City Hospital, the results obtained as many as 6 respondents (6.3%) applied self-management in the less category, as many as 84 respondents (88.4%) applied self-management in the not enough category, and as many as 5 respondents (5.3%) apply self-management in the good category. This explains that most people with diabetes mellitus in Depok City Hospital have self-management with not enough category, because it can be seen from the results of the questionnaire answers that the lowest indicator of the questionnaire that has been given is the lack of physical activity carried out by the respondents. This is in line with the results of the research by Handriana & Hijriani, that self-management carried out by people with diabetes mellitus is within not enough limits with a lack of physical activity due to the average age of patients who have entered the age of 50 years.[22] However, it is different from the research results of Putri et al and Huang et al where the Application of self-management of diabetes mellitus patients is already in the good category. This difference is possible because the number of people with diabetes mellitus in this study occurred in women because women tend to carry out risky behaviors for the occurrence of diabetes mellitus, namely their lack of physical activity.[15]

VI.   CONCLUSION

Based on the results of research and discussion on the relationship between the background of people with diabetes mellitus and the level of Application of self-management in patients with diabetes mellitus, the following conclusions can be drawn:

a. The majority of diabetes mellitus patients in Depok City Hospital are more than 60 years old as many as 53 respondents (55.8%), female sex as many as 62 respondents (65.3%), have a low level of education with 53 respondents (55.8%) , and work as housewives as many as 45 respondents (47.4%), and have suffered from diabetes mellitus for more than 5 years as many as 53 respondents (55.8%).

b. The majority of diabetes mellitus patients in Depok City Hospital apply self-management with not enough category as many as 84 respondents (88.4%) with the highest average value in implementing self-management, namely blood sugar management with a value of 8.99 and an average value the lowest is on physical activity with a value of 2.88.

c. There is no relationship between age and the level of self-management in patients with diabetes mellitus at RSUD Kota Depok with value = 0.299, ($\rho > \alpha$).

d. There is no relationship between gender and the level of self-management Application in patients with diabetes mellitus at RSUD Kota Depok with value = 0.687, ($\rho > \alpha$).

e. The results showed that there was no relationship between the level of education and the level of self-management in patients with diabetes mellitus at the Depok City Hospital with value = 0.359, ($\rho > \alpha$).

f. The results showed that there was no relationship between the duration of suffering from diabetes mellitus with the level of Application of self-management in patients with diabetes mellitus at the Depok City Hospital with value = 0.723, ($\rho > \alpha$).

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