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The effect of discharge planning on the stability of blood sugar levels in type 2 diabetes mellitus patients

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ABSTRACT

Introduction: Diabetes mellitus (DM) is a serious threat to human health in the 21st century, Indonesia as a developing country has a high number of sufferers. This study aims to analyze the effect of discharge planning on the stability of blood sugar levels in type 2 patients.

Methods: The design of this study was a Quasi-Experimental Pre and Post-test with a Control Group. The population in this study were all patients with type 2 DM, a large sample of 54 respondents, taken by purposive sampling technique. The instruments used are a glucometer, questionnaire, and discharge planning form. Data analysis used Wilcoxon statistical test for pre-treatment and control groups and the Mann-Whitney test for post-treatment and post-control.

Results: The results of the Wilcoxon statistical test pre-post-treatment obtained = 0.000 and pre-post-control obtained = 0.093. The results of post-treatment and control group obtained = 0.009 and value = 0.05. It means that there is an effect of discharge planning on the stability of blood sugar levels in type 2 DM patients at A. Yani Islamic Hospital, Surabaya.

Conclusion: The conclusion of this study is discharge planning can affect the stability of blood sugar levels in patients with diabetes mellitus type 2.

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INTRODUCTION

Diabetes Mellitus is a metabolic disease group WITH hyperglycemia condition result from abnormalities in insulin secretion, insulin action, OR both.[1] Diabetes mellitus occurs because sugar accumulates in the blood so that it fails to enter the cells. This failure occurs due to the lack of insulin hormone or functional defects. Diabetes mellitus (DM) is a serious threat to human health in the 21st century. Several factors that affect blood glucose control in patients with type 2 diabetes include changes in lifestyle, knowledge, habits of consuming high-calorie foods, lack of activity, obesity, smoking, and sleep disorders.[2]

Knowledge related to discharge planning about DM is a means that can help sufferers to carry out diabetes management so that the more and the better for patients to know about diabetes mellitus, then change their behavior,

control the stable condition of blood sugar levels in type 2 DM patients so that they can live longer, long time with good quality of life and stable sugar content. Various studies show that the level of knowledge of DM sufferers is still low.[3,4] Therefore, in-depth knowledge and understanding of required discharge planning by each nurse is. Based on related research by Lathifah (2017) that the success of discharge planning can be seen from the patient's ability to follow up safely and realistically after leaving the hospital and can be seen from the readiness to face discharge.[5]

The discharge planning mechanism is to provide care and the process of identifying the patient's needs and planning to include an effective assessment between 2000, patients and post-hospitalization family, this is carried out to reduce blood sugar levels with unstable blood sugar levels, as well as exchange information between patients as service recipients and nurses during hospitalization until discharge

from the hospital.[6]

One of the uses of the importance of discharge planning in patients with type 2 DM is expected to reduce the amount of sugar level instability in patients with type 2 DM. reduce hospitalization, help clients to understand needs after hospitalization, and can be used as treatment documentation material.[7,8] This study aims to determine the effect of discharge planning on the stability of blood sugar levels in patients with type 2 diabetes mellitus.

METHODS

Study Design

The design of this study was a Quasi-Experimental Pre and Post-test with a Control Group Design.

Data Collection

The population in this study was 63 patients with type 2 diabetes mellitus,

a large sample of 54 respondents, taken by purposive sampling technique. The independent variable is discharge planning; the dependent variable is the stability of blood sugar levels. The instruments used are glucometer, questionnaire, and form discharge planning.

Data Analysis

Data analysis used the statistical Wilcoxon test for pre-post treatment and control groups and the groups Mann Whitney test for post-treatment and post-control.

RESULTS

Univariate Analysis

1. Age

Table 1 shows that of the 27 respondents in the partial treatment group large (51.9%) are late adults between the ages of 46-55 years. In the control group, most (63%) are late adults between the ages of 46-55 years.

2. Education

Table 2 shows that of the 27 respondents in the treatment group almost all (92.6%) were high school educated. In the control group, most (74.1%) were high school educated.

3. Socio-Economic

Table 3 shows that of the 27 treatment groups almost entirely (96.3%) > MSE. In the control group most (85.2%) > MSE.

4. Gender

Table 4 shows that of the 27 respondents in the large treatment group (59.3%) were male. In the control group, most (55.6%) were male.

5. Length of Suffering

Table 5 shows that of the 27 respondents in the treatment group most (66.7%) had DM for 4-6 years. In the control group most (63%) had DM for 4-6 years.

6. Knowledge Level

Table 6 shows that most of the 27 respondents in the treatment group (74.1%) have a sufficient level of knowledge. In the control group almost entirely (92.6%) have a good level of knowledge.

Table 1. Distribution of Respondents by Age at Surabaya A. Yani Islamic Hospital in 2020.

No	Age	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	46-55	14	51.9	17	63
2	56-65	11	40.7	9	33.3
3	66-75	2	7.4	1	3.7
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 2. Distribution of Respondents Based on Education at the Surabaya A.Yani Islamic Hospital in 2020.

No	Education	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	Elementary School	0	0	0	0
2	Junior High School	0	0	1	3 ,7
3	SMA	25	92.6	20	74.1
4	Diploma/Bachelor	2	7.4	6	22.2
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 3. Distribution of Respondents by Socio-Economic at the Surabaya A.Yani Islamic Hospital in 2020.

No.	Socio-Economic	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	<UMK	1	3.7	4	14 ,8
2	> MSE	26	96.3	23	85.2
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 4. Distribution of Respondents by Gender in Surabaya A.Yani Islamic Hospital in 2020.

No	Sex	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	Male	16	59.3	15	55.6
2	Female	11	40.7	12	44.4
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 5. Distribution of Respondents Based on Length of Suffering at the Surabaya A.Yani Islamic Hospital in 2020.

No	Length of Suffering	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	<4 years	0	0	1	3 ,7
2	4-6 years	18	66.7	17	63
3	>6 years	9	33.3	9	33.3
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Analysis

7. The bivariate stability of blood sugar levels in the treatment group and control group before discharge planning

Table 7 shows that before being given the treatment module almost all (92.6%) experienced poor stability. In the control group, almost half (40.7%) experienced moderate and poor stability.

8. Stability of blood sugar levels in the treatment group and the group before discharge planning

Table 8 shows that before being given the treatment group module almost all (81.5%) experienced good stability. In the control group, almost half (48.1%) experienced good stability.

9. Stability of blood sugar levels in Type 2 DM patients with discharge planning (modules) and without giving modules

Table 9 shows that almost all of the treatment groups (92.6%) experienced poor stability before discharge planning was given and after discharge planning was given almost all (81.5%) experienced good stability. In the previous control group, almost half (40.7%) experienced moderate and poor stability after almost half (48.1%) experienced good stability.

DISCUSSION

1. Level Blood Sugar Stability Before Discharge Planning

Table 7 above shows that before discharge planning, almost all of the group (92.6%) experienced poor stability. In the control group, almost half (40.7%) experienced moderate and poor stability. Increased blood sugar levels occur because insulin cannot be used by the body effectively which results in chronic metabolic diseases and causes macroangiopathy and microangiopathy.[9–11]

In the treatment and control groups from the results of the study, patients of the male sex were patients with type 2 diabetes. The risk factor for diabetes mellitus was wrong because of gender. Where men have a faster risk of diabetes than women. This difference in risk is influenced by the distribution of body fat. In men, increased fat is concentrated around the abdomen, triggering central obesity which further triggers disorders, such as diabetes. This study is supported by the theory of Mohebi et al (2013) which states that many men are inappropriate in consuming

Table 6. Distribution of Respondents Based on Knowledge Level at Surabaya A.Yani Islamic Hospital in 2020.

No	Knowledge Level	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	Good	7	25.9	25	92, 6
2	Enough	20	74.1	2	7.4
3	Less	0	0	0	0
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 7. Distribution of Respondents Based on Stability of Blood Sugar Levels Conducted Before Discharge Planning at Surabaya A.Yani Islamic Hospital in 2020.

No.	Stability of Blood Sugar Levels	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	Good	0	0	5	18.6
2	Moderate	2	7.4	11	40.7
3	Poor	25	92.6	11	40.7
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 8. Distribution of Respondents Based on Stability of Blood Sugar Levels Discharge Planning was carried out at the Surabaya A.Yani Islamic Hospital in 2020.

No	Stability of Blood Sugar Levels	Treatment		Group Control Group	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	Good	22	81 ,5	13	48.1
2	Moderate	4	14.8	9	33.4
3	Poor	1	3.7	5	18.5
	Total	27	100	27	100

Source: Primary Data, August-September 2020

Table 9. Distribution of differences in blood sugar levels in Type 2 DM patients with discharge planning (modules) and without modules in Islamic Hospital A Yani Surabaya.

No	Blood Sugar Level Stability	Treatment				Group Control Group			
		Pre		Post		Pre		Post	
		N	%	N	%	N	%	N	%
1	Good	0	0	22	81.5	5	18.6	13	48.1
2	Moderate	2	7.4	4	14.8	11	40.7	9	33.4
3	Poor	25	92.6	1	3.7	11	40.7	5	18.5
	Total	27	100	27	100	27	100	27	100
	Wilcoxon P Value	0.000				0.093			
	Mann Whitney P Value					0.009			

Source: Primary Data, August-September 2020

more calories than women. Treatment for adherence regimens was mostly carried out by women because more men than women did physical activity outside the home.[6] This illustrates that everyone has a different level of stability. It is also influenced by gender, age, and knowledge of DM patients which causes unstable blood sugar levels. This is possible because, at the time of administering discharge planning without the module, the patient forgot what the nurse had conveyed, thus affecting the stability of blood sugar in type 2 DM patients.

2. Stability of Blood Sugar Levels After Discharge Planning

Table 8 above shows that before being given the treatment module almost completely overall (81.5%) experienced good stability. In the control group, almost half (48.1%) experienced good stability.

In the treatment and control groups, from the results of the study, patients with high school education were the most patients with DM type 2. The level of formal education was the basis for doing something, creating more understanding & knowing something, or accepting & rejecting something. The level of formal education also supports disparities in knowledge and decision-making regarding health requirements. According to a previous study, someone with less knowledge has low compliance compared to good knowledge.[2] Research by Espino et al (2011) suggests that the higher a person's level of education, he will tend to behave positively because the education obtained can lay the foundations of understanding in a person.[12] Discharge planning by being given a module is one form of additional method that is quite effective in increasing knowledge when patients forget what has been taught by health workers.

3. The Effect of Discharge Planning on the Stability of Blood Sugar Levels in Type II DM Patients

The measurement results based on table 9 above show that almost all of the treatment groups (92.6%) experienced poor stability before discharge planning was given. almost all (81.5%) experienced good stability after the discharge planning was given. In the previous control group,

almost half (40.7%) experienced moderate and poor stability after almost half (48.1%) experienced good stability.

The results of the Wilcoxon test in the treatment group obtained a value = 0.000 and a value = 0.05 means <, then there is an effect of discharge planning on the stability of blood sugar levels in type 2 DM patients at A.Yani Islamic Hospital Surabaya. In the control group, the value = 0.093 and the value = 0.05 means > then there is an influence of discharge planning on the stability of blood sugar levels in type 2 DM patients in the control group at A. Yani Islamic Hospital Surabaya.

The results of the test Mann-Whitney to distinguish the results of post-discharge planning in the treatment group and the control group obtained a value = 0.009 and a value = 0.05. Means <, then there is an effect of discharge planning on the stability of blood sugar levels in type 2 DM patients at A. Yani Islamic Hospital Surabaya. The results of this study are supported by Ewald et al (2013) who suggest that meal planning or diet management is the primary thing in the management of DM. Good diet management must meet the 3J's, namely amount, type, & schedule.[13]

Providing education in optimizing treatment is a very important pillar for the management of diabetes mellitus. Self-management and compliance with patients can be improved if effective education is carried out.[14] Education that is carried out cannot directly change negative perceptions about diabetes mellitus, but this education can change behavior and increase knowledge.[15]

The active role of families and people with diabetes mellitus is an important point in the success of discharge planning. The role of the researcher is very important in the activities of the participants in the group and being a role model. Support and motivation not only from oneself but from the surrounding environment, especially family support is very helpful in the process of family improvement.[8] The stability of blood sugar levels experienced by patients with type 2 DM in managing their disease can provide education related to the pillars of DM management and the provision of modules. The pillars of DM management include meal planning or diet management, physical

exercise, hyperglycemic drugs, and health education.[3]

CONCLUSION

The conclusion of this study is that discharge planning can affect the stability of blood sugar levels in type 2 DM patients. Efforts that can be made by nurses are always to apply education in discharge planning as an independent intervention, in addition to learning modules about diabetes mellitus so that they can be used as goals. healthy life goals for patients.

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