

The Effect Of Provision Of Physical Movement Activities On Increasing Basal Metabolism Rate In Diabetes Mellitus Patients In Namohalu Esiwa Puskesmas, Nias Utara Regency 2020

Jenni Susi Sihite¹, Lely Desi Uli Basana², Wisna³

^{1,2,3}STIKesNauliHusadaSibolgaJl. Kader Manik No. 2, Sibolga, Indonesia

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ABSTRACT

Diabetes mellitus (DM) is the most commonly determined endocrine disease. This disease is a metabolic disorder that is genetically and clinically heterogeneous with manifestations in the form of loss of carbohydrate tolerance, this heterogeneous disorder is characterized by increased levels of glucose (blood sugar) in the blood or hyperglycemia. Decreased physical activity causes a decrease in muscle mass and an increase in fat mass so that it This will have an impact on the body's own basal metabolism. The purpose of this study was to determine the effect of giving physical activity activity to increasing basal metabolism rate in patients with diabetes mellitus at the NamohaluEsiwa Public Health Center, NiasUrata Regency. This type of research used a quasi-experimental design.), the sample was taken using the total population technique, namely all populations, namely all populations were used as a sample of 10 people. It was carried out from 03-31 July 2017. The research instrument was in the form of SOP for movement activities. Data analysis was used with an independent t test. The results of the study showed that there was an effect of giving movement activity to the basal metabolic rate value in NIDDM patients at the NamohaluEsiwa Public Health Center, North Nias Regency. The average BMR is 8.77%, on the effect of giving movement activity to the basal metabolic rate value in NIDDM. Therefore, improving service facilities for NIDDM sufferers, especially in physiotherapy problems on movement activity.

E-mail:

devikristina30@gmail.com

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1. Introduction

According to the World Health Organization (WHO) there are two main types of diabetes mellitus, namely insulin-dependent diabetes mellitus or "insulin-dependent diabetes mellitus" (IDDM) also known as type 1 diabetes mellitus and diabetes mellitus (NIDDM) which is also known as type 2 diabetes mellitus. In addition to the two main types of diabetes mellitus, there are also other diabetes groups, namely Impaired glucose tolerance (IGT) and gestational diabetes mellitus (GDM) (Ministry of Health, Republic of Indonesia, 2005).

The Central Bureau of Statistics estimates that in 2013 there were 14 million Indonesians with diabetes. That number is predicted to continue to rise to 51 million by 2030. Meanwhile, in East Java, the prevalence of diabetes mellitus is 1.43% in urban areas and 1.47% in rural areas (Harrison, 2010). Based on a preliminary study at the UPT PuskesmasNamahaluEsiwa, North Nias Regency itself, in 2016 the number of people with diabetes mellitus was 25 people. From the results of interviews with 3 people with NIDDM before getting any movement activity, from the results of laboratory examinations, the basal metabolic value of patients with an average of 8.6% with fasting glucose levels in the 150 to 200 range.

2. Method

2.1 Research Design

This study uses a quasi-experimental design (quasi-experimental), which is a research design to solve research problems that involve manipulation (treatment).

2.2 Research Location And Time

The reason for taking this research place is that the NamohaluEsiwa Public Health Center is one of the health centers in the study area, the sample is sufficient to conduct research, and no research has been conducted on the effect of giving physical activity activity to increasing basal metabolic rate in patients with diabetes mellitus in NamohaluEsiwa Public Health Center, North Nias Regency

2.3 Population and Sample

The population in this study were all patients with diabetes mellitus in the working area of the NamohaluEsiwa Health Center, North Nias Regency as many as 10 people. The sample is part of the population selected with a certain sample to be able to meet or represent the population (Nursalam, 2013).

3 Results and Discussion

TABLE 1
FREQUENCY DISTRIBUTION OF BMR MEASUREMENT RESULTS BEFORE GIVING PHYSICAL MOVEMENT ACTIVITIES

No Resp	Usia (Tahun)	TEKANAN DARAH (mmHg)		Nadi (X/menit)	Nilai BMR (dalam %)
		Sistole	Diastole		
1	45	120	90	60	-4,8
2	52	140	90	64	13
3	43	130	90	72	11,6
4	47	120	80	68	8,6
5	49	110	70	60	2,6
6	46	110	80	76	7,2
7	48	110	70	68	8,6
8	46	120	80	72	11,6
9	50	130	90	64	5,6
10	48	120	90	72	4,2
Jumlah Total					68,2

TABLE 2
FREQUENCY DISTRIBUTION OF BMR KNOWLEDGE RESULTS AFTER GIVING PHYSICAL GRAPH ACTIVITY

No Resp	Usia (Tahun)	TEKANAN DARAH (mmHg)		Nadi (X/menit)	Nilai BMR (dalam %)
		Sistole	Diastole		
1	45	120	90	64	-4,8
2	52	140	90	72	11,6
3	43	130	90	76	7,2
4	47	120	80	72	11,6
5	49	110	70	60	10
6	46	110	80	68	8,6
7	48	110	70	72	11,6
8	46	120	80	72	11,6
9	50	130	90	68	8,6
10	48	120	90	78	8,7
Jumlah Total					87,7

Based on the graph above, it can be seen that after administration of graphic activity on a regular basis, there is generally an increase in the basal metabolic value. Basal metabolism in patients with NIDDM before giving regular movement activity the average value is:

$$\begin{aligned}
 \text{Mean} &= \frac{\sum \text{NilaiBMR}}{n} \\
 &= \frac{68,2\%}{10} \\
 &= 6,82\%
 \end{aligned}$$

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Meanwhile, the average basal metabolic value of NIDDM patients after regular exercise is:

$$\begin{aligned} \text{Mean} &= \frac{\sum \text{NilaiBMR}}{n} \\ &= \frac{87,7}{10} \\ &= 8,77\% \end{aligned}$$

After the data was collected, data analysis was then carried out to determine whether there was an effect of giving movement activity on the basal metabolic value in NIDDM patients.

TABLE 3
FREQUENCY DISTRIBUTION OF WILCOXON TEST AID

No Responden	XA1	XB1	Beda Tanda Jenjang			
			XB1-XA1	Jenjang	+	-
1	-4,8	-1,8	3	1	+	-
2	13	11,6	-1,4	2,5	+1	0
3	11,6	7,2	-4,4	2,5	0	-2,5
4	8,6	11,6	3	5,5	0	-2,5
5	2,6	10	7,4	5,5	+5,5	0
6	7,2	8,6	1,4	5,5	+5,5	0
7	8,6	11,6	3	5,5	+5,5	0
8	11,6	11,6	0	8	+5,5	0
9	5,6	8,6	3	9	+8	0
10	4,2	8,7	4,5	10	+9	0
Jumlah Total					T=+50	-5

Information :

XA1 = BMR data before giving motion activity

XB1 = BMR data after giving motion activation

Based on the table above, it is known that the level with a small value is -5. While the t table based on the attachment for n = 10 and the error rate of 5% is 8. Because the number of t tests is 5 and the t table is 8, it can be seen that the number of t tests is smaller than the t table (-5 < 8), so Ha is accepted.

3.1 DISCUSSION

Based on the data obtained, it can be seen that NIDDM patients who are given physical activity for three days on a regular basis will experience an increase in basal metabolic value. The results of this study obtained the value of t table 8 with a significance level of 5% and n is 10 greater than the t test value of 5 so that in this case HO is rejected and H 1 is accepted.

4 Conclusion

Based on the results of the study, it was found that the basal metabolism of patients with NIDDM at the NamohaluEsiwa Health Center in North Nias Regency would increase after being given but movement activity. Basal metabolism rate in NIDDM patients at the NamahaluEsiwa Public Health Center, North Nias Regency, before giving movement activity the average BMR was 6.82%. Basal metabolism rate in NIDDM patients at the NamahaluEsiwa Public Health Center, North Nias Regency, after giving movement activity the average BMR was 8.77%. There is an effect of giving movement activity to the basal metabolic rate value in NIDDM patients at the NamohaluEsiwa Health Center in North Nias Regency.

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