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The Effect of Low Impact Aerobics to Blood Pressure and Hemoglobin of Hypertensive Sufferers in Telaga Biru Community Health Centre Gorontalo Districts 2018

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Abstract
Active physically and regular exercise will help out the workload of heart and arteries so that it will result in blood pressure reduction. Besides breathing exercise, aerobics is a suitable exercise for those who suffer heart disease and high blood pressure. This research aims to find a right method to control blood pressure by providing Low Impact Aerobics Practice. This research design is quasi experiment with Control Time Series Design. The subject of this research is hypertensive sufferers with a total of 61 samples divided into 2 groups, which are 31 Low Impact Aerobics + Anti-Hypertensive Drugs group samples, and 30 breathing exercise group samples as the comparison. The research is conducted in Telaga Biru (gymnastic intervention) Community Health Centre and in the sufferer's house within 30 days in September 2018. The research result shows that there is a difference in systolic blood pressure before and after low impact aerobics intervention. Meanwhile there is no difference found in diastolic blood pressure. Hemoglobin level increased after the second week and third week intervention but insignificant statistically. The conclusion is, low impact aerobics intervention gives a significant impact on systolic blood pressure reduction to Hypertensive sufferers.

Keywords*: Low impact aerobics, blood pressure, hypertensive*

1.0 INTRODUCTION

Various results of epidemiological research prove that there is a linkages between active life style with hypertension. Therefore, WHO, ACSM, The National Heart Foundation Joint National Committe on Detection, Evaluation and Treatment of High Blood Pressure recommend highly to increase physical activities as the first intervention in prevention efforts and hypertension treatment (Dalimartha dkk, 2008).

The research conducted by Susanto (2008) in the journal of Roza et al. (2015) find that various things are known able to control blood pressure, one of them is exercise training especially aerobic type. Aerobics is divided into two, which are high impact and low impact. The suitable exercise for heart disease or hypertension sufferers is low impact aerobics because of it's light movement and can be done by anybody starting from children, adults, or even the elderly.

The result above is supported by American Journal of Hypertension which provides the information that aerobics has a big impact in blood pressure level. Aerobics is a type of exercise that involves body muscles repeatedly and with a regular rhythm. This training improves the health of heart, lungs, muscle function, and have a big impact to blood pressure level.

Besides aerobics, breathing exercise also plays a role in blood pressure reduction to hypertensive sufferers. A research conducted in American Journal of Hypertension also finds that anybody can control their blood pressure with a right breathing technique. Breathing technique (slow deep breathing), can effectively reduce high blood pressure and keep it normal. This is supported by the research result of Wang et al. (2010), that abdominal breathing exercise can slowly reduce sympathetic activities and increase vagal activities so that it will have impact to blood pressure reduction.

2.0 METHODOLOGY

The research type used is quasi-experimental research with Control Time Series Design. The research is conducted in Telaga Biru Community Health Centre and in the patient's houses within 30 days in September 2018. The population in this research is all hypertensive sufferers who come for treatment to Community Health Centre and blood pressure sufferers who stay at home and willing to participate in this research. The sample of this research is the sufferers who come for treatment to Telaga Biru Community Health Centre used as aerobics treatment group, meanwhile hypertensive sufferers who stay at home is used for breathing exercise therapy treatment group which is the comparison group.

The sampling technique in this research is purposive sampling, the sufferers are used as the samples based on the criteria determined previously by the researcher. The criteria are : Patients who are willing and cooperative to

become respondent ; Patients with grade 1 hypertension whose systolic pressure are ≥140 mmHg or diastolic pressure ≥ 90 mmHg and Patients with grade 2 hypertension whose systolic pressure are ≥ 160 mmHg and diastolic pressure ≥ 100 mmHg; Female or male patients who are older than ≥ 45 years old; and Do not suffer chronic diseases (diabetes, rheumatism, tuberculosis, and stroke).

3.0 DRESULTS AND DISCUSSIONS

a. Sample Characteristic

Table 1. Respondent Distribution Based on Age to Intervention and Control Group

Age Group	Intervention		Control	
	Frequency	(%)	Frequency	(%)
45-59 years old	16	51.6%	12	40.0%
60-74 years old	14	45.2%	16	53.3%
75-90 years old	1	3.2%	2	6.7%
Total	31	100%	30	100%

Source : Primary Data, 2018

Table 1 shows that there are at most age group of 45 – 59 years old with a total of 16 people (51.6%) from 31 respondents. Meanwhile there are at most age group of 60 – 74 years old with the total of 16 people (53.3%) from 30 respondents.

b. Health Status

Table 2. Distribution of Respondent's Health Status

Variable	Group		Total
	Intervention n=31	Control n=30	
Diagnosis of Hypertension			
Less than 1 Month	-	2 (6.7)	2 (3.4)
More than 1 Month	31 (100)	28 (93.3)	59 (96.6)
Consumption of Hypertension Drugs			
Yes	31 (100)	-	31 (50)
No	-	30 (100)	30 (50)
Other Consumption of Drugs			
Yes	6 (19.4)	-	6 (9.7)
No	25 (80.6)	30 (100)	55 (90.3)
History of Hipertension			
Yes	18 (58.1)	13 (43.3)	31 (50.7)
No	13 (41.9)	17 (56.7)	30 (49.3)
Smoking Status			
Yes	1 (3.2)	-	1 (1.6)
No	30 (96.8)	30 (100)	60 (98.4)
Pressure Status			
Yes	2 (6.5)	-	2 (3.2)
Often	19 (61.3)	22 (73.3)	41 (67.3)
Sometimes	10 (32.3)	8 (26.7)	18 29.5)

Based on the health status in the table 2 above, according to Diagnosis of Hypertension that most have suffered more than 1 month in intervention group and control group. In which there are 31 (100%) for intervention group and there are 28 (93.3%) for control group.

The habit of consuming hypertension drug for intervention group is that all respondents consume hypertension drugs 31 (100%), meanwhile all respondents do not consume hypertension drugs for control group. Most of them do not consume other drugs for other drug consumption in intervention group and control group. In which for intervention group 25 (80.6%) and for control group 30 (100%).

The history of hypertension for intervention group is that 18 (58.1%) respondents have the history of hypertension, meanwhile for control group is that 13 (43.3%) respondents have the history of hypertension. Smoking status is that most of them do not smoke for intervention group and control group. In which for intervention group 30 (96.8%) and for control group 30 (100%). Meanwhile the pressure status of both group is that most of them have experienced pressure before, and for intervention group 21 (65.2%) respondents have experienced pressure before and for control group 22 (73.3%) have experienced pressure before.

c. Analysis of Low Impact Aerobics Impact to Blood Pressure and Hemoglobin Levels

Table 3. Average Distribution of Low Impact Aerobics Impact to Blood Pressure and Hemoglobin

Group	**Variable**	**Observation in Week**								
		Week I			**Week II**			**Week III**		
		Pra	**Post**	**α ≤0,05**	**Pra**	**Post**	**α ≤0,05**	**Pra**	**Post**	**α ≤0,05**
	Blood Pressure	Mean SD	Mean SD		Mean SD	Mean SD		Mean SD	Mean SD	
Intervention = 31	Systolic	147,7 ± 19,8	141,3 ± 15,4	0,001	147,7 ± 19,8	140,1 ± 17,1	0,020	147,7 ± 19,8	144,5 ± 18,5	0,007
	Diastolic	85,8 ± 10,9	86,1 ± 9,2	0,000	85,8 ± 10,9	87,5 ± 11,7	0,000	85,8 ± 10,9	88,8 ± 9,7	0,000
Control n = 30	Systolic	159,9 ± 18,3	153,8 ± 18,0	0,000	159,9 ± 18,3	144,5 ± 18,2	0,000	159,9 ± 18,3	141,4 ± 17,7	0,000
	Diastolic	96,9 ± 6,0	95,4 ± 8,9	0,000	96,9 ± 6,0	92,3 ± 9,3	0,002	96,7 ± 6,0	90,9 ± 10,9	0,019
Intervention n=31	**Hemoglobin**	12,3 ± 1,4	12,2 ± 1,8	0,092	12,3 ± 1,4	12,9 ± 1,4	0,288	12,3 ± 1,4	12,8 ± 1,1	0,038
Control n = 30		14,0 ± 2,0	13,4 ± 1,7	0,000	14,0 ± 2,0	13,8 ± 1,8	0,000	14,0 ± 2,0	13,8 ± 2,3	0,000

3.1 Systolic Blood Pressure

The research result after intervention in the first week shows that there is a blood reduction of 6,4 mmHg significantly (p=0.001). So is the case that in the second week is 7,6 mmHg and a reduction of 4,2mmHg in the third week but insignificant statistically. Roza (2015) states that low impact aerobics is an aerobic physical activity which mainly beneficial to increase and maintain the health and resistance of heart, lungs, muscles, and joints. As well as the result found by Mahatadinar (2016), who states that aerobics practice has a significant impact at reducing systolic and diastolic blood pressure to hypertension sufferers.

The reduction in systolic pressure also happens in control group. The reduction significantly happens in the three weeks of research phases. This condition is possible because deep breathing practice is given to control group three times a week. The most reduction happens in the end of the third week which is 8,5 mmHg. Breathing practice can give relaxation to the limb and has an impact in indirect blood pressure reduction. The relaxation of a procedure

and technique which aim to reduce tension and anxiety, by training patients so that they are able to purposely relaxing the body's muscles at all times, in accordance with the wishes (Sepdianto et al. 2013). Other researches by Hastuti (2015) show that there is a deep breathing technique therapy impact to blood pressure reduction in hypertensive sufferers, and that deep breathing relaxation technique is very effective to reduce blood pressure to hypertensive patients.

3.2 Systolic Blood Pressure

It appears that there is a significant increase in all three research phases. A different result in control group which shows that there is a significant reduction ($p<0.005$) in all three research phases and most reduction in the third week is 5.8 mmHg. The condition of blood vessel and nervous system is very closely related to diastolic blood pressure.

3.3 Hemoglobin Level

In the first week, there is hemoglobin level increase in intervention group. Hemoglobin level increase happens in the second week / phase, which is 0,6% and 0,5% in the third week even though insignificant statistically. This condition is caused by the sufferers are still in the adjustment phase to aerobics movements so that the result obtained is not optimal to hemoglobin level increase. The same condition is obtained in the control group. The research result shows that there is no hemoglobin level increase. In fact, a little hemoglobin level reduction is found after three research phases.

4.0 CONCLUSION

The conclusion from this research is that there is a significant difference to systolic blood pressure after low impact aerobics intervention, meanwhile there is no difference found in diastolic blood pressure. Also there is a difference of average hemoglobin level increase after low impact aerobics intervention but insignificant statistically, meanwhile there is no increase in the control group (breathing practice).

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