



ERGONOMICS GYMNAS TIC INFLUENCE ON ELDERLY BLOOD PRESSURE WITH HYPERTENSION

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ABSTRACT

High blood pressure disease or hypertension is commonly suffered by most of elderlies. Hypertension is a trigger or main cause of stroke and coronary heart disease. Based on preliminary study, elderlies 42nd with hypertension and found the treatment of hypertension is by giving antihypertension drug. The research purpose to know the effect of ergonomic gym to blood pressure elderly with hypertension in BAPELSOS Lansia Cepiring Kendal. Pre-experimental research with one group pre and posttest without control group design. Population in this research elderly suffering hypertension in BAPELSOS Lansia Cepiring Kendal as much 38 elderly. Analysis used Wilcoxon Signed Ranks Test with the level signifikan 0.05. Intruments research observation sheet, tensimeter, ergonomic gymnastics. The procedure for the researcher to take blood pressure measurements before being given ergonomic exercise to the respondent. Then provide ergonomic exercise for 14 days for 20 minutes. Then posttest blood pressure measurements. Based on Wilcoxon test, established $Z_{count} = -5.467$ and Z_{table} was 1.64, and p-value = 0.000 with $\alpha = 0.05$. Where p-value $0.000 \leq 0.05$. There was an effect of ergonomic gym to blood pressure in elderly with hypertension in BAPELSOS Lansia Cepiring Kendal.

KEYWORDS: Elderly, Hypertension, Ergonomic Gym.

INTRODUCTION

Elderly isn't disease but representing an process decrease the body endurance in face of excitement from within and also from outside body. Process this represent the continuous process naturally, taking place since somebody reach the adult age (Nugroho, 2008). Old process can cause the change in structure and body function. One of physical change that happened at lansia was increasing of blood pressure or hypertension.^[1]

Elderly is often incurred a cause hypertension by inertia of artery so that blood pressure tend to increase. Others cause of lansia also because of change of life style and more important again possibility of happening of high blood pressure because increasing bigger age one who is a lot of consuming food which is a lot of containing salt.^[2]

Hypertension represent an trouble of vein resulting degradation of supply of oxygen and nutrisi (Rezky, 2015). So this disease is suffered, blood pressure of patient have to be watched consecutively. This matter was conducted to anticipate the blood pressure mounting and arise the symptom continueing at body organ of like stroke, heart sickness coroner.^[3]

Prevalensi of Hypertension in the world reach men are 29.2% and woman are 24.8% (WHO, 2013). Prevalensi Hypertension in Indonesia equal to 26.5%. Prevalensi got passing measurement of age 18th of equal to 25.8%, at Bangka Belitung 30.9%, followed at the South of Kalimantan 30.8 %, East of Kalimantan 29.6%, and West Java 29.4% (Risksedas, 2013). Prevalensi Hypertension measurement of age 18th of Provinsi Central Java equal to 26.4%. Prevalensi Hypertension of elderly pursuant to age group, 55-64 year equal to 45.9%, 65-74 equal to 57.6%, and > 75 year equal to 63.8%.^[4]

In Semarang Central Java, prevalensi of hypertension 2014 equal to 21.637 % when compared to 2013 equal to 50.5%. Pursuant to graph of 2014, hypertension occupy the first position that is as much 423 case (Profile of Health of Semarang, 2014). At Kendal Regency, there are prevalensi of hypertension 2012 as much 2049 case occupying third position after hypertension of esensial and diabetes mellitus.^[5]

Hypertension can be controlled with the therapy farmakologis and non farmakologis. therapy Farmakologis was therapy by using assistive drugs degrade and also stabilize the blood pressure. therapy Farmakologis own the side effects that is can make

matters worse the other fatal effect or disease. This matter because of respon to type medicinize in each people differ. Side effects which possible arise are headache, confused, weaken, and queasy. One of correct alternative to degrade the blood pressure without existence of depending of drug and side effects is by using therapy of non farmakologis. Medication non farmakologi do not use the substance from chemical compound, for example from plant substance, taking care of pattern eat the, regular athletics, lessening asupan of alcohol and cigarette, refleksi, and type of health therapy. One of therapy non farmakologis which can be used to lessen the hypertension is ergonomics gymnastic.^[6]

Ergonomics gymnastic developed from best gymnastic technique. Especial Benefit from ergonomics gymnastic are draw tip of nerve blood-vessel, bringing back nerve position, pressurizing more to smooth vein in head, filling oxygen through blood stream to brain, activating sweat gland, system of body heater, and other nerve system. Movement practice gymnastic the ergonomics very effective in looking after health because its movement very anatomical, simpel, and is not dangerous so that can be done by everybody from children until parent.^[6]

Ergonomics gymnastic have an effect on to blood pressure degradation. Effectiveness practice gymnastic the ergonomics with the gymnastic of aerobic low impact to level of blood pressure of elderly with hypertension result between influence most effective ergonomics gymnastic of pressure of systole and gymnastic of aerobic low impact of pressure diastole.^[7]

Practice gymnastic the healthy heart and gymnastic of ergonomics of combination of relaks breath in to blood pressure of patient with primary hypertension obtained by result of healthy heart gymnastic and gymnastic of ergonomics of combination of relaksasi breath in both of the same effective to degradation of blood pressure of sistolik and diastolik of hypertension patient.^[6]

On that account, researcher lift the problem influence practice gymnastic the ergonomics to degradation of blood pressure elderly with hypertension at BAPELSOS Lansia Cepiring Kendal.

MATERIAL AND METHODS

This Research pre-experimental by desain one group pre and posttest design without control. Population in this research elderly suffering hypertension in BAPELSOS Lansia Cepiring Kendal as much 38 elderly. Analysis used Wilcoxon Signed Ranks Test with the level signifikan 0.05. Intrumens research observation sheet, tensimeter, ergonomic gymnastics.

The procedure for the researcher to take blood pressure measurements before being given ergonomic exercise to the respondent. Then provide ergonomic exercise for 14

days for 20 minutes. Then posttest blood pressure measurements.

RESULTS AND DISCUSSION

Respondent Characteristic of Age

Tables. 1: Distribution of Frekuensi of Age of Responder Lansia.

Age	Frequency	Percentage (%)
60-74 tahun	36	94.7
75-90 old	2	5.3
> 90 old	0	0
Total	38	100

Pursuant to research result, indicating that respondent total at age group 60-74th as much 36 elderly (94.7%). Hypertension to increase by increasing age. Pursuant to research by Subekti (2014) finding most respondent have 60-74th as much 88% and some of minimizing at age 75-90th as much 12% experiencing of hypertension. Research by Siringoringo (2013) saying that there was relation having a meaning of between] age with the hypertension occurrence of elderly with the result test the Chi-Square, $p = 0.041$. At the research visible that hypertension proportion of group old age 45-59th was 54.72%, of group old age 60-74th 74.57%, and of group old age 75-90th was 64.29% it's meaning was elderly of group old age 60-74th own the possibility of risk of larger ones experience of hypertension.^[8]

Expressing that individual which old age above 60 year, 50-60% having bigger blood pressure or equal to 140/90 mmHg. That matter represent the degeneracy influence that happened at one who getting old. This matter cause to the number of calcium circulating with blood stream. As a result blood become more solid and blood pressure even also mount the. Calcium sediment in venous wall (arteriosclerosis) cause the venous stricture.^[9]

Blood stream become annoyed and mount the blood pressure. Age accretion cause the artery elasticity decrease oppositely, also tend to stiff so that blood volume emitting a stream of a few and less be fluent. So blood requirement in network answered the demand, hence heart have to pump the stronger blood so that blood pressure mount the.^[10]

From result analyse above inferential that age influence blood pressure.

Respondent Characteristic of Gender

Tables. 2: Distribution Frekuensi of Gender.

Gender	Frequency	Percentage (%)
Men	5	13.2
Woman	33	86.8
Total	38	100

Pursuant to research result got respondent woman amount as much 33 elderly (86.8%). this Research result woman tend to to suffer the hypertension than men. The research as much 27.5% woman experience of the

hypertension, while for the men of only equal to 5.8%.^[11] Woman will experience of the make-up of high blood pressure risk (hipertensi) after menopause that is above age 45 year. Woman which not yet menopause under of hormone estrogen which playing a part in to improve the rate of High Density Lipoprotein (HDL). Effect of Protection estrogen considered to be clarification existence of woman immunity of age premenopause. Premenopause woman start the loss little by little hormone estrogen which during the time protect

the vein from damage. Process this still going on where the hormone estrogen change its amount as according to woman age naturally. Menopause, low cholesterol HDL rate and height of cholesterol LDL (Low Density Lipoprotein) influencing the happening of process aterosklerosis and result the high blood pressure.^[12]

From result analyse above inferential that woman more risk suffer the hypertension compared to men.

Blood Pressure Before Implementation Ergonomics Gymnastic

Tables. 3: Blood Pressure of Respondent Before Implementation Ergonomics Gymnastic.

	Mean ± SD	Min	Max	95% CI for mean	
				Lower	Upper
Sistolik Before	162.37 ± 13.643	150	200	157.88	166.85
Diastolik Before	86.58 ± 6.271	80	100	84.52	88.64

Pursuant from tables 3, result of average of blood pressure of sistolik before implementation ergonomics gymnastic ± permanent branch was 162.37 ± 13.643, with the blood pressure of sistolik lower 150 mmHg and highest 200 mmHg. Average of blood pressure of

diastolik before implementation ergonomics gymnastic ± permanent branch was 86.58 ± 6.271, with the blood pressure of diastolik lower 80 mmHg and highest 100 mmHg.

Blood Pressure After Implementation Ergonomics Gymnastic

Tables. 4: Distribution of Frekuensi of Blood Pressure of Respondent after implementation by Ergonomics Gymnastic.

	Mean ± SD	Min	Max	95% CI for mean	
				Lower	Upper
Sistolik After	142.11 ± 8.433	130	160	139.33	144.88
Diastolik After	83.16 ± 4.711	80	90	81.61	84.71

Pursuant from tables 4, result of average of blood pressure of sistolik after implementation ergonomics gymnastic ± permanent branch was 142.11 ± 8.433, with the blood pressure of sistolik lower 130 mmHg and highest 160 mmHg. Average of blood pressure of

diastolik after implementation ergonomics gymnastic ± permanent branch was 83.16 ± 4.711, with the blood pressure of diastolik lower 80 mmHg and highest 90 mmHg.

Influence Ergonomics gymnastic to Blood Pressure

Tables. 5: Influence Ergonomics gymnastic to Blood Pressure.

	Min	Max	Mean ± SD	Z _{hitung}	p-value
Blood Pressuer sistolik Before	150	200	162.37 ± 13.643		
Blood Pressure sistolik after	130	160	142.11 ± 8.433	-5.467	0.000
Blood Pressure diastolik before	80	100	86.58 ± 6.271		
Blood Pressure diastolik After	80	90	83.16 ± 4.711	-3.357	0.001

Pursuant to tables 5, this test the value Zhitung for the blood pressure of sistolik was equal to - 5.467 and blood pressure of diastolik equal to - 3.357. Zhitung compared to value Ztabel to analyse with the belief level 95 = 0.05 with the examination two sides (2 tailed), obtained by Ztabel = 1.64. This result was strenghtened with the p-value 0.000.

It was mean Ho refused and ha accepted. the Analysis data inferential that there were influence ergonomics gymnastic ergonomics to blood pressure of elderly with hypertension at BAPELSOS Elderly Cepiring Kendal.

Influence Practice gymnastic the Ergonomics to Blood Pressure: Pursuant to research result, before done ergonomics gymnastic, blood pressure of respondent, highest pressure sistolik was 200 highest mmHg and diastolik that was 100 mmHg. blood pressure of Sistolik lower 150 mmHg and diastolik lower 80 mmHg. According to result of researcher observation, factor at most becoming risk elderly incurred hypertension that was consume the excessive salt natrium because elderly still be freed to buy the food outside Panti and not yet there was nutritionist and durasi / sleep quality which less. Consume the excessive natrium cause the concentration natrium in dilution

ekstraseluler mount. To be normal return dilution intraseluler have to be pulled by exit so that the dilution ekstraseluler volume cause the increasing of blood volume, so that affect incidence of hypertension.^[13]

Unfavourable quality Sleep will be more a lot of triggering sympathetic nerve system activity and generate the stresor physical and physiological.^[14] If sleep quality experience of the short habit durasi sleep or ugly sleep quality can improve the blood pressure somebody. Ugly Sleep quality can result the hormone of regulator of balance of blood pressure did't work in an optimal fashion, so that bedtime loss can make the nerve system become later hyperactive influence the system of all body was inclusive of heart and venous.^[15]

Therefore elderly with hypertension at BAPELSOS Lansia Cepiring Kendal expected can take care of the pattern eat healthy like lessening excessive salt natrium consumption and take a rest enough. Distribution of respondent show the blood pressure after intervention of pressure of lower sistolik that was 130 mmHg and pressure diastolik own the minimum value 80 mmHg. Pressure Sistolik own the maximal value that was 160 mmHg and pressure diastolik own the maximal value 90 mmHg. Effectiveness practice gymnastic the ergonomics with the gymnastic of aerobic low impact to level of blood pressure elderly with hypertension with the result of paired sample t-test of experiment group 1 (group practice gymnastic the ergonomics) known that the p-value = $0.001 < 0.05$, this matter show the H_0 refused, so that the research inferential that there was difference of blood pressure of sistolik and diastolik pretest-posttest of experiment group 1.

The happening of degradation of blood pressure because ergonomics gymnastic peep out the respon relaxation. So that this expenditure endorphin pursue the activity trigger cell, hence spandrel of substansia gelatinosa closed and impulse of pain in bone decrease or a few in transmission to brain, condition like this can make the client reach the calm circumstance. condition Relax can give the smooth massaging at various gland of body, degrading production kortisol in blood, bringing back hormone expenditure which sufficiently so that give the balance of emotion and mind calmness.^[16]

Movement gymnastic ergonomics can be done by interdependent as routine gymnastic practice every day, or at least 2-3 times one week during minimizing 20 minute. Each movement also can be done separately, in between activity or work everyday.^[17] From research result which researcher have indicating that blood pressure of respondent experience of the degradation of pressure of sistolik and degradation diastolik. About efektifity practice gymnastic the healthy heart and gymnastic of ergonomics of combination of relaxation breath in to blood pressure of patient of primary hypertension express the same thing that happened by

the degradation of blood pressure of sistolik and blood pressure diastolik.^[6]

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