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INFLUENCE OF YOGA ON THE BLOOD PRESSURE OF ELDERLY WITH HYPERTENSION

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ABSTRACT

According to WHO (World Health Organization) about 972 million people in the earth suffering from hypertension that occurs in the elderly over the age of 60 years. The purpose of this study is to determine the effect of yoga exercises on blood pressure in the elderly who experienced hypertension in Social House Trisna Werdha Kasih Sayang Ibu Batusangkar. This research was conducted in April to May 2017 with quantitative methods. The instrument used was the observation sheet with elderly respondents who suffered from hypertension as many as 12 people that meet the criteria with Total Sampling. The statistical test used is Dependent t-test. The results of statistical tests showed a significant influence between elderly blood pressure before yoga gymnastics and after yoga exercises with *p* value = 0.000 (<0.05). So it can be concluded that there is a relationship of yoga exercises with blood pressure.It is expected to Trisna Werdha Kasih Sayang Ibu at Batusangkar Social House to be able to make this yoga gymnastics as one of the main program for elderly.

Keywords: Yoga Gymnastics , Blood Pressure

INTRODUCTION

Elderly are at high risk for degenerative diseases, such as Coronary Heart Disease (CHD), hypertension, diabetes mellitus, gout (rheumatism) and cancer. One of the diseases often experienced by the elderly is hypertension (Dalimartha, 2008). Hypertension or high blood disease is a disorder of the blood vessels that result in oxygen supply and nutrients, which are carried by the blood obstructed to the tissues of the body in need (Sustrani, 2006).

The incidence of hypertension increases with age. A person over 60, (50% - 60%) has a blood pressure greater than or equal to 140/90 mmHg. This is a degenerative influence that occurs in people who are getting older. Hypertension is a multifactorial disease that arises because of the interaction of various factors. With increasing age, the blood pressure will also increase. After the age of 45 years, the arterial wall will experience thickening due to the accumulation of collagen substances in the muscle layer, so that the blood vessels will gradually become narrow and stiff. Systolic blood pressure increases as flexibility of the large blood vessels diminishes in age to the seventh decade, whereas diastolic blood pressure increases until the fifth and sixth decades then persists or tends to declinen (Dalimartha, 2008).

World Health Organization (WHO) data show that worldwide, about 972 million people or 26.4% of the world's population suffer from hypertension (26.6%) and 26.1% of women. This figure is likely to increase to 29.2% by 2030. Of 972 million people with hypertension, 333 million are in developed countries and 639 are in developing countries, including Indonesia (WHO, 2012).WHO data in 2009 showed elderly who had a history of hypertension amounted to (7.49%) of the total population, in 2011 to (7.69%) and in 2013 obtained elderly proportion of (8.1%) of total population (WHO, 2012).

Nationally (25.8%) of Indonesia's population suffer from hypertension disease. If the current population of Indonesia amounted to 252.124.458 inhabitants then there are 65,048,110 people who suffer from hypertension (Ministry of Health, Republic of Indonesia,2013). Based on a national health basic research survey (Ministry of Health, Republic of Indonesia, 2013) hypertension has a high prevalence of 25.8%. In addition, hypertension control is not yet adequate despite the availability of many effective medicines (Depkes, 2013).

According to data (Ministry of Health, Republic of Indonesia, 2013). Prevalence of hypertension in elderly age 55 - 64 years old (45.9%), age 65 - 74 years old (57.6%), and age 75 years old (63.8%). The number of hypertension cases in some provinces in Indonesia has

exceeded the national average, from 33 provinces in Indonesia there are 8 provinces with hypertension cases exceeding the national average: South Sulawesi (27%), West Sumaetra (27%), West Java (26%), East Java (25%), North Sumatera (24%), South Sumatra (24%), Riau (23%) and East Kalimantan (22%) (Ministry of Health, Republic of Indonesia, 2013).

In accordance with data from BPS West Sumatra Province, hypertension patients (31.2%) while national data reached (31.7%) (Profil Kesehatan Provinsi Sumatera Selatan, 2014). Hypertension in elderly can be prevented or treated. There are various ways to treat hypertension, among others, by taking blood pressure-lowering drugs, dietary regulation, exercise, reduce stress, avoid alcohol and cigarettes. In addition to lowering blood pressure can also use the concept of holistic nursing (Koizer & Erb, 2010).

Holistic is one of the underlying concepts of nursing actions that include the physiological, psychological, socio-cultural, and spiritual dimensions. The dimension is a unified whole, if one dimension is disturbed will affect other dimensions. In holistic nursing there are four great modalities of healing, such as touch therapy (massage, acupressure, foot reflexology and reiki), mind-body (exercise) therapy (progressive relaxation, biological feedback, imagination, yoga, meditation, prayer, music therapy, laughter, hypnosis and aroma therapy), transpersonal therapy (non-contact therapeutic touch and intermediate prayer) and alternative treatment therapies (acupuncture and oriental medicine, chiropathic, herbal remedies, homeopathy and naturopathy). Apart from the above therapy, exercise can also cure hypertension (Koizer & Erb, 2010).

Exercise is one of the physical and psychological activities of someone who is useful to maintain and improve the quality of one's health. Exercise, which can lower high blood pressure, is part of the effort to reduce weight and manage stress, two factors that enhance hypertension. By doing the right movement for 30-40 minutes or as much as at least 3 days and a maximum of 4 days per week can lower blood pressure as much as 10 mmHg on systolic and diastolic readings. Sports that can be done by elderly with hypertension one of them is yoga gymnastics. Yoga is a unifying mechanism of the body (body), mind and soul (Marchanda & Madan, 2015).

Yoga is an integrated system of self culture, which aims at harmonious development of body and mind and covers all aspects of human life that lead to physical well being, mental harmony culminating into positive thinking, happiness and peace (Marchanda & Madan, 2015).Yoga combines breathing, relaxation and mediation techniques and stretching exercises. Yoga is recommended in people with hypertension, because yoga has a relaxing effect that can improve blood circulation throughout the body. Smooth blood circulation indicates good heart work (Marchanda & Madan, 2015).

According to Pangaribuan & Bewari (2016) the influence of gymnastics yoga, heart, elderly gymnastics and aerobics in lowering blood pressure in the elderly research results obtained that regular exercise exercises can reduce the value of blood pressure in the elderly who fall into the category of hypertension.While a research Wolff *et.al.*,(2013) about Impact of yoga on blood pressure and quality of life in patients with hypertension – a controlled trial in primary care, matched for systolic blood pressure. The result shows that the yoga class group showed no improvement in blood pressure or self-rated quality of life, while in the yoga at home group there was a decline in diastolic blood pressure of 4.4 mmHg ($p< 0.05$) compared to the control group. Moreover, the yoga at home group showed significant improvement in self-rated quality of life compared to the control group ($p < 0.05$).

Kinasih (2010) also conducted research on the effect of yoga practice on improving the quality of life. The results show that yoga exercises have an effect on the physical, psychological and spiritual.Dinata (2015) in his research on how to lower blood pressure in the elderly through yoga gymnastics concluded that every part of yoga practice has good benefits for the body especially to lower blood pressure, so yoga is highly recommended in people with high blood pressure.

According to Hagins *et al.*,(2013), effectiveness of Yoga for hypertension. Results show that all 17 studies included in the review had unclear or high risk of bias. Yoga had a modest but significant effect on systolic blood pressure p=0.0002 and diastolic blood pressure p=0.0001. The results of the initial survey conducted by researchers obtained the number of elderly as many as 70 people. Of 70 elderly people there are 12 elderly people who have a history of hypertension, which consists of 8 men and 4 women.

The results of interviews conducted by researchers with

3 officers that have never applied yoga exercises. Nurses also said that 12 elderly people had blood pressure above 140/110 mmHg with cardiac complications and diabetes mellitus. According to 3 elderly people also argued that the rise in blood pressure is often caused by stress factors, thoughts, and the influence of food purchased outside without permission from the officer. Elderly said not knowing about yoga gymnastics, because it has never been done.

Based on this, researchers interested in researching about the "Influence of Yoga Gymnastics Against Blood Pressure In The Elderly With Hypertension In The Tresna Werdha Kasih Sayang Ibu at Batusangkar Social House".

METHODOLOGY

The research method used in this research is quantitative method. This study to determine the effect of yoga gymnastics on blood pressure elderly who experience hypertension in Trisna Werdha Kasih Sayang Ibu at Batusangkar Social House. The research design used in this research is the type of Pre-experimental Design research design using the one group pretest-posttest research design is a study with no control group, but it has been done the first observation (pretest) that allows research can test the change - changes that occur after an experiment (Sugiyono, 2008).

With the design form as follows:

Table 1: Research Design

Q1	*X*	Q2
Pre-Test	Yoga Gymnastics	Post-Test

The sample is part of the population to be studied or part of the number of characteristics possessed by the population (Hastono, 2006). In this study the sample taken by researchers as many as 12 people.This research uses Total Sampling method where all population is taken as sample (Hidayat, 2007).

In this study data collection is done by using the implementation of Yoga Gymnastics and observation sheet. This study was conducted for 3 weeks with the implementation of yoga exercises for 30-60 minutes. Researchers visit the elderly who became respondents to each - each guest house. After the respondent signed an agreement to be sampled, then the researchers collect elderly who are willing to be sampled in the Hall of Tresna Werdha Kasih Sayang Ibu at Batusangkar Social House.

Then the researchers explain briefly about the purpose of research and the benefits of gymnastics yoga. After that the researchers measured the respondent's blood pressure to serve as pretest data. The researchers recorded the results of blood pressure in the observation sheet. After 10 minutes, researchers started doing yoga exercises against the respondents with the duration of doing yoga exercises for 30-60 minutes. After doing gymnastics of yoga, respondents are invited to rest for a while for 30 minutes, then the researchers do the blood pressure of respondents back to be used as data Postest. Then do the recording on the observation sheet. After all collected for 3 weeks, the researchers reviewed whether the observation sheet and demographic data of the respondents were completed or not.

In doing the analysis, the data first processed with the aim of converting data into information. In statistics, the information obtained is used for the decision-making process, especially in hypothesis testing.The data analysis used is *T* dependent or paired sample test to test mean difference between two dependent data groups (Hastono, 2006).

RESULTS

After the data is collected then processed by computerized and presented in the form of Diagram and table below.

Table 2: Frequency Distribution of Blood Pressure Before Gymnastic Yoga Based on Systolic Blood Pressure

Systolic	*f*	%
Normal	0	0
Prehypertension	0	0
Mild hypertension	5	41.7
Moderate hypertension	6	50.0
Severe hypertension	1	8.3
Malignant hypertension	0	0
Total	12	100.0

Based on the above table it can be seen that at the time before doing gymnastics yoga there are half respondents who suffer from hypertension with systolic blood pressure is on the scale of moderate hypertension is 6 people (50%).

Table 3: Frequency Distribution of Blood Pressure Before Yoga Gymnastics Based on Diastolic Blood Pressure

Diastolic	*f*	%
Normal	0	0
Prehypertension	1	8.3
Mild Hypertension	8	66.7
Moderate Hypertension	3	25.0
Severe Hypertension	0	0
Malignant Hypertension	0	0
Total	12	100.0

Based on the above table it can be seen that at the time before doing gymnastics yoga there are more than half of respondents who suffer from hypertension with diastolic blood pressure is on the scale of mild hypertension is 8 people (66.7%).

Table 4: Frequency Distribution of Blood Pressure After Yoga Gymnastics Based on Systolic Blood Pressure

Systolic	*f*	%
Normal	0	0
Prehypertension	0	0
Mild Hypertension	6	50.0
Moderate Hypertension	6	50.0
Severe Hypertension	0	0
Malignant Hypertension	0	0
Total	12	100.0

Based on the above table it can be seen that at the time after doing gymnastic yoga there are half respondents who suffer from hypertension with systolic blood pressure is on the scale of mild hypertension is 6 people (50%).

Table 5: Frequency Distribution of Blood Pressure After Yoga Gymnastics Based on Diastolic Blood Pressure

Dastolic	*f*	%
Normal	0	0
Prehypertension	5	41.7
Mild Hypertension	7	58.3
Moderate Hypertension	0	0
Severe Hypertension	0	0
Malignant Hypertension	0	0
Total	12	100.0

Based on the above table it can be seen that at the time after doing gymnastic yoga there are more than half of respondents who suffer from hypertension with diastolic blood pressure is on the scale of mild hypertension is 7 people (58.3%).

Table 6: Mean of Systolic and Diastolic Blood Pressure

Variabe l	Mean	SD	*p value*
Systolic before and after yoga exercises	5.000	2.923	0.000
Diastolic before and after yoga exercises	6.500	2.276	0.000

Based on the above table it can be seen that the average systolic blood pressure before and after doing gymnastic yoga is 5,000 with standard deviation 2,923. While the mean diastolic blood pressure before and after doing gymnastic yoga is 6,500 with standard deviation 2,276. The result of *T* test on systolic blood pressure before and after yoga exercises got *p* value = 0.000 (*p* value <0,05) meaning there is significant difference between systolic blood pressure before and after doing yoga gymnastics and *T* test result on diastolic blood pressure before and after yoga exercises *p* value = 0,000 (*p* value <0.05) means that there is a significant difference between diastolic blood pressure before and after doing yoga exercises. So it can be concluded that there is influence of yoga exercises on blood pressure elderly who have hypertension.

DISCUSSION

The results showed that at the time after doing gymnastic yoga there are 6 respondents with systolic blood pressure is on the scale of mild hypertension (50%). While at the time after doing yoga exercises there are 7 respondents with diastolic blood pressure is on the scale of mild hypertension (58.3%).

The mean systolic blood pressure before and after yoga exercises was 5.000 with a standard deviation of 2.923. While the mean diastolic blood pressure before and after doing gymnastic yoga is 6.500 with standard deviation 2.276.

The result of statistical test showed that systolic blood pressure before and after yoga exercise got *p* value = 0,000 (*p* value <0,05) meaning that there is significant difference between systolic blood pressure before and after doing yoga gymnastics and *T* test result on diastolic blood pressure before and after yoga exercises *P* value =

0,000 (*P* value <0.05) means there is a significant difference between diastolic blood pressure before and after doing yoga exercises. So it can be concluded that there is influence of yoga exercises on blood pressure elderly who have hypertension.

The results are supported by Pangaribuan & Bewari's research (2016) on the influence of gymnastics yoga, heart, elderly gymnastics and aerobics in lowering blood pressure in the elderly research results obtained that regular exercise exercises can reduce the value of blood pressure in the elderly who fall into the category of hypertension.

This is also in line with the study of Wolff *et.al.*, (2013) on the impact of yoga on blood pressure and quality of life in people with hypertension. The results showed that the yoga class did not show any increase in blood pressure or quality of life alone, while in the yoga group at home decreased diastolic blood pressure of 4.4 mmHg (p <0.05) compared with the control group In addition, the yoga group at home shows significant self-improvement compared to the control group (p <0.05).

The same study also conducted Kinasih (2010) about the influence of yoga practice on improving the quality of life. The results show that yoga exercises have an effect on the physical, psychological and spiritual.

While Dinata (2015) in his research on how to lower blood pressure in the elderly through yoga gymnastics concluded that every part of yoga practice has good benefits for the body especially to lower blood pressure, then yoga is highly recommended in people with high blood pressure.

The same is revealed by Hagins *et al*., (2013) in his research on the Effectiveness of Yoga for Hypertension shows that Yoga has a simple but significant effect on systolic blood pressure with p-values=0.0002 and diastolic blood pressure with $p = 0.0001$) .

This study is also supported by the theory of Marchanda & Madan (2015) which states that yoga can regularly reduce the 'aldosterone' stress hormone which is a powerful vasoconstrictor that can increase blood pressure. Regular yoga exercises can reduce the 'vasopressin' of other stress hormones secreted by the pituitary gland in the brain that can increase vasopressin through the contraction of blood vessels.

Yoga is recommended in people with hypertension, because yoga has a relaxing effect that can improve blood circulation throughout the body. Smooth blood circulation indicates good heart work (Marchanda & Madan, 2015).

From the results of research and theory above researchers analyze that yoga gymnastics does have a relationship or it can affect a person's blood pressure. This has been proven by researchers and also previous researchers. But there are also some studies that the results are unrelated, perhaps because of respondents' factors, wrong or incorrect time and possibly due to inappropriate techniques. Because to get good results that someone must also do gymnastics yoga regularly, on time implementation, exactly how to do it, then someone also must do gymnastics yoga seriously because in doing yoga gymnastics one must focus his mind. As we know that blood pressure will be normal if someone's mind is calm, so yoga exercises done with a calm mind and his intentions come from himself rather than coercion from others.

CONCLUSION

Based on the results of this study it can be concluded that before doing yoga exercises there are half respondents with systolic blood pressure is on the scale of moderate hypertension and diastolic blood pressure is on the scale of mild hypertension while after doing yoga exercises there are half respondents with systolic blood pressure is on the scale of mild hypertension and diastoliknya are on the scale of mild hypertension. From the statistical test found there was a significant difference between blood pressure before and after doing gymnastics yoga, so it can be concluded that there is influence of yoga exercises on blood pressure in elderly who have hypertension. For that, yoga gymnastics program can be used as one of the main programs for the elderly at the Trisna Werdha Kasih Sayang Ibu in Batusangkar Social House in and not only elderly who suffer from hypertension, but yoga gymnastics is applicable for all elderly. It is expected that officers at the Social Institution should be more strict in supervising the elderly who get food deliveries from the family. The likelihood of increased elderly blood pressure is caused by the food that the family carries while visiting.

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