

A Systematic Review: Benefits of Physical Activity in Elderly Hypertension

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Abstract: Increasing life expectancy has an impact on increasing the number of elderly people. With increasing age, the elderly will be more susceptible to various physical complaints due to a decrease in bodily system functions. Physical activity that is lacking in the elderly increases the risk of hypertension. This systematic review aims to determine the benefits of physical activity in elderly hypertension. This study uses a systematic review method with search articles on Ebsco, Proquest, Science Direct, Oxford and Google Scholar published in the last ten years (2008-2018). Ten studies reviewed used a cross sectional and quasi experimental design. The relationship between physical activity and decreased blood pressure in the elderly was found in six studies. Two studies reported that physical activity can improve the cognitive abilities of hypertensive patients. One study that showed regular physical activity had a positive effect on quality of life and another study showed reducing the cost requirements for elderly hypertension. Thus, regular and consistent physical activity can reduce blood pressure and improve health status in the elderly. Need more research and consistent methods to understand the effectiveness of physical activity in hypertensive patients.

Keywords: Physical activity, elderly, hypertension

INTRODUCTION

Improving the health and well-being of the population will have an effect on increasing the Age of Life Expectancy (UHH). Given the price of life expectancy to produce additional values. According to predictions [1], the elderly population in 2025 is 14.9% and increased to 16.4% in 2030, so that by 2050, the population with a age of 60 years and above is predicted to increase to two billion. Meanwhile in Indonesia also showed a tendency to increase the percentage of elderly groups compared to other age groups which was quite rapid. Based on population projection data, it is estimated that in 2017 there will be 23.66 million elderly people (9.03%), predicted the number of elderly population in 2020 (27.08 million), in 2025 (33.69 million), in 2030 (40, 95 million) and in 2035 (48.19 million) [2]. According [3], This is a challenge because the large population of the elderly can cause various problems, especially health problems. With increasing age, the elderly will be more susceptible to various physical complaints due to a decrease in bodily system functions, both due to natural factors and due to illness.

The aging process is one of the processes in human life where progressive changes occur, which cause various decreases in the functioning of organs in humans. One of them is a decrease in cardiovascular organ function characterized by high blood pressure or hypertension in the elderly. According [4], the prevalence of hypertension in Indonesia based on blood pressure measurements is very high, namely 25.8% of the total adult population suffering from hypertension. Whereas according to the PTM Surveillance Information System, the percentage of high blood pressure in Indonesia by sex is male by 48% while women are 43.7%. According to the age group the majority of high blood pressure in the elderly group (age ≥ 60 years) was 63.9%, 43.6% in the age group 35-59 years 16.9% in the age group 15-34 years [5].

Hypertension can be triggered by two factors: factors that cannot be controlled and factors that can be controlled. Factors that cannot be controlled include heredity, gender, and age. While the factors that can be controlled are obesity or obesity, fat consumption, sodium consumption, stress, exercise or physical activity, and smoking. Handling hypertension is usually done by giving antihypertensive drugs. But the administration of this drug needs to be considered given the condition of the organs in the elderly who have experienced a decline in function. Therefore, another alternative is needed to control the increase in blood pressure in the elderly. One alternative is to do physical activity regularly [6].

Globally in 2010, elderly people were less active than young adults, 55% of the elderly group did not meet the recommended level of physical activity and 19% of the young age group [7]. Physical activity is an

activity that uses muscles and bones (burning calories) in every activity, such as gardening, sweeping, mopping, walking, cycling, or other sports. Lack of physical activity if the activity is less than 30 minutes a day or less 150 minutes / week [5].

Hypertension in the elderly can be intervened by doing physical activity in the form of exercise or exercise regularly. According [6], the steps that can be taken for a cardiovascular response, namely a decrease in pressure and pulse resting thoroughly. Physical exercise will have an effect on the body that affects the system, hormonal system, circulatory and respiratory systems, digestive system, metabolism, and the exhaust system.

This study was conducted to systematically review the various benefits of physical activity in the elderly who suffer from hypertension.

METHOD

This study is a systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol.

Search Strategy

Data collection is done using subscribed database search engines by www.lib.ui.ac.id. Literature searches were carried out on five online databases namely Ebsco, Proquest, Science Direct, Pubmed with keywords in English and to complete the literature search conducted on Google School with keywords in Indonesian. The keywords used to find the research articles were "hypertension", "physical activity", "elderly", which were published from January 2008 to October 2018.

Studi Selection

The selection of articles is done by identifying research that describes the benefits of physical activity in elderly people with hypertension aged 60 years and over. The research design reviewed was cross sectional and quasi-experimental. The intervention included in the review is physical activity. Research that reports on decreasing blood pressure and other benefits related to physical activity in the results of the study was included in this review.

The inclusion criteria for articles deemed appropriate for systematic review are journals, theses, theses, and dissertations; the study was written in English and Indonesian, a cross-sectional and quasi-experimental research design and published in the last ten years. Restrictions are made by not including articles that cannot be accessed openly, only published in abstract form and the target is not in the elderly.

To identify additional articles, a review of the reference list is carried out in relevant articles and related to systematic reviews.

Data Extraction

Reviewers review articles by reading titles, abstracts and complete articles to assess the feasibility of study. Extracting data is done by making a standard form. The information extracted is about study characteristics, study participants, methods, variables, results and conclusions and study suggestions.

RESULTS

Based on literature search results identified 9,567 articles related to research topics using keywords in English. There are 205 articles on the Ebsco database, 578 articles on Proquest, 92 articles on Science Direct, 4,932 articles on Oxford and 3,760 studies in Indonesian on the Google Scholar database. Screening results based on the year of publication identified 605 articles, only 307 articles that could be accessed in full text. Screening results based on the title found 67 articles that potentially met the criteria and there were 27 articles based on abstract screening that met the inclusion criteria. Based on further searches by reading the article as a whole, only 10 articles could be included in this review. The article selection process can be seen in Figure 1. PRISMA Flow The following diagram:

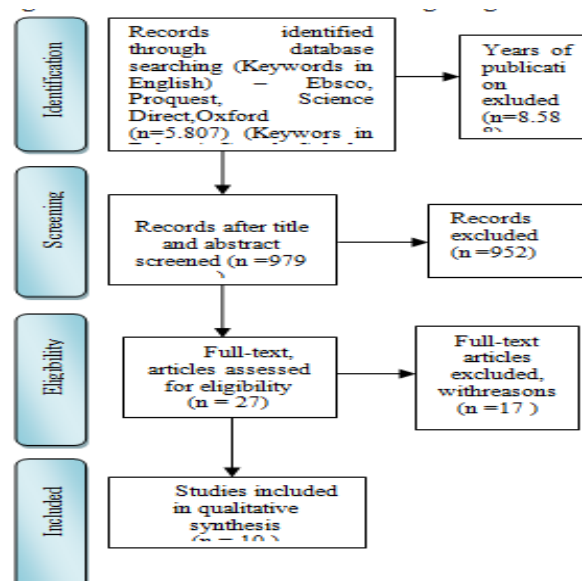


Figure 1. Preferred Reporting Items for Systematic Review and Meta-Analysis (Moher et al: 2009).

Of the 10 articles that were eligible for analysis, five studies were conducted in Indonesia, two studies were conducted in Brazil and each one was conducted in Bangladesh, China and in Myanmar. In this article the results of the benefits of physical activity that can reduce blood pressure, can improve cognitive abilities, can improve quality of life and physical activity can reduce the cost needs of elderly hypertension.

Physical Activity can reduce Blood Pressure

Of the 10 literature reviewed, six studies found an association between physical activity and decreased blood pressure. It is known that there are various physical activities that can control blood pressure, one of which is sports such as aerobics. In the results of the study (Sari & Sarifah, 2016) about Low Impact Aerobics Gymnastics on Blood Pressure Changes in the Elderly, it showed that there was a difference between the average blood pressure before and after intervention in the experimental group. The decrease in blood pressure after low impact moderate intensity aerobic exercise, dropped from an average of 152.23 / 90.40 mmHg to 141.97 / 87.40 mmHg. This shows that low impact aerobic exercise has a significant effect on reducing blood pressure in the elderly. Physical activity will have a good influence on the cardiovascular system. When doing physical activity, blood pressure will increase and will experience a decrease after the exercise of physical activity is complete. Exercises with moderate intensity aerobic exercise performed regularly can reduce blood pressure in the elderly.

Study by [10], who studied 180 people, there were 70 people (38.88%) who had hypertension, 56.7% had stage I hypertension and most (70%) of the physical activity of the respondents was in the moderate category. This study analyzed the relationship between physical activity and blood pressure in the elderly also obtained test results which showed a correlation between the level of correlation between physical activity and blood pressure. At present there are not enough studies with consistent methods and results to determine physical activity as a hypertension prevention program. But evidence shows that physical activity can reduce blood pressure. The level of correlation between physical activity and blood pressure shows the importance of increasing the intensity of physical activity for 30-45 minutes per day as a strategy for prevention and management of hypertension.

Research on the prevalence and risk factors for hypertension carried out [11] reported, among 481 people screened for hypertension, 160 were hypertension with a prevalence of 33.3%, prevalence of pre-hypertension. is 29.9% (143) people. In the age group of 60-69 years, of 82 people screened there were 58.53% of those with hypertension. The prevalence of hypertension at ≥ 70 years is 84% of 53 people screened. Found 36% (173) people physically inactive. Among hypertensive patients only 11.9% did 30 minutes of routine exercise, 9.4% did irregular exercise and 78.8% did not do any exercise. In the elderly who naturally experience various decreases in their body function, exercise can maintain health and reduce blood pressure in cases of hypertension. Gymnastics is one type of exercise that will affect the work of the lungs and heart. and improve fitness. Gymnastics can keep the heart well maintained and make blood pressure controlled and improve fitness.

Physical activity is a risk factor for hypertension, as [12] concluded that there is a relationship between physical activity and blood pressure in the elderly. The population in this study were 88 elderly

people with high blood pressure. From 60 samples there were 53 respondents, (88.3%) with mild physical activity and 7 (11.7%) respondents with heavy physical activity. Respondents with mild activity tended to experience hypertension. Lack of physical activity increases the risk of suffering from hypertension. Inactive people tend to have a higher heart rate so that the heart muscle must work harder on each contraction. The harder and often the heart muscle has to pump, the more pressure is placed on the arteries.

Research by [13], who assessed the relationship between physical activity and the incidence of hypertension in the elderly found as many as 70.8% of elderly people with mild activity in 100 people who measured their physical activity. Increased risk of hypertension along with the occurrence of lifestyle changes. Someone prefers foods that are not nutritionally quality due to the ease of access that exists, as well as the low level of physical activity every day. Seditary behavior causes an imbalance between energy intake and energy expenditure. So that it can be concluded that lack of physical activity is one factor in the occurrence of hypertension in the elderly. Therefore a health promotion program is needed that focuses more on improving people's lifestyles, especially the elderly.

The same was stated by (Bjertness et al.: 2016) in a study of the prevalence and determinants of hypertension, found an association between hypertension and physical activity. The prevalence of hypertension increased in the 50.1% male elderly group and 53.4% female. Overall, 3 out of 10 Myanmar residents who are elderly suffer from hypertension. It was found that there was an increased chance of hypertension in behavioral factors, lack of physical activity, especially low physical activity in the workplace and residents living in urban areas. The high prevalence of hypertension in people in urban areas who lack activity shows the need for counseling about the importance of physical activity in the elderly to reduce the incidence of hypertension in the community.

Management of hypertension can be done pharmacologically or non-pharmacologically, one of which is physical activity. Exercise and regular physical activity can reduce the average blood pressure in patients with hypertension. More detailed research on the effectiveness of this intervention and policy implementation is very important in order to reduce the risk of non-communicable diseases, especially hypertension.

Physical Activity can improve cognitive abilities

Two studies that state physical activity can improve cognitive abilities, namely [15] examined 86 participants who were mostly women (80.2%) with a significantly higher average age of male participants than women, it turns out that high blood pressure was found in 40% of participants, without significant differences between the sexes. A higher risk of cardiovascular events is associated with physical exercise. High levels of routine and continuous physical activity have a relationship with high scores of cognitive function and decreased cognitive function. Individuals with higher cognitive abilities are associated with good knowledge of healthy lifestyle habits and commitment to physical exercise. Regular physical activity can improve the results of Mini Mental State Examination (MMSE) and the risk for lower cerebro and cardiovascular disease.

Other research conducted by (Muzamil: 2014), said the level of active physical activity has a higher normal cognitive function than respondents with less active levels of physical activity. From the statistical test using the Chi Square formula, the value of $p = 0.044$ is obtained. So it can be concluded that there is a relationship between physical activity and cognitive function ($p < 0.05$).

Individuals over 65 years of age with chronic diseases such as hypertension need treatment, clinical monitoring and regular physical activity. Regular exercises such as aerobics, muscle strengthening and stretching and balance training can improve physical fitness and have a positive effect on disease management including controlling systemic blood pressure in hypertensive patients. aktivitas fisik yang kurang aktif.

Physical Activity can Improve Quality of Life

One study that reported physical activity has a positive effect on quality of life related to health is [17] which examined health quality related to life and factors affecting patients with hypertension in Shaanxi Province, China concluded physical activity regular is a positive influencing factor in HRQoL (Health Related Quality of Life) in hypertensive patients. Lower HRQoL scores were found at older ages compared to younger ages. Scores of the age groups 55-65 and ≥ 65 were 0.046 and 0.099 respectively lower than the age group 15-34. HRQoL scores tend to decrease with age, so it can be said that lack of physical activity is a factor that can reduce quality of life for elderly hypertensive patients.

To improve the quality of life for hypertensive patients, health education is needed for the prevention of hypertension by adopting healthy habits such as regular physical activity. Another thing that is not less important is strengthening the management and monitoring of hypertension in the elderly, and then

implementing a free medical service and examination program for the elderly under the public health program.

Physical Activity Reduces Cost Needs

Study in Sao Paulo Brazil [18], the analyzed the relationship between the level of physical activity and the frequency of walking in a week from the SABE (Health, Welfare and Aging Survey) Survey to describe annual drug expenditure for hypertension in the elderly, finding 806 elderly people who were sampled in the study, 95.9% (n = 767) had high blood pressure. Based on the weekly activities carried out, 72% (n = 575) were classified as elderly who were not active enough, 54.7% of whom were women. This study also showed that elderly hypertension sufferers who did not carry out walking activities in a week had a higher risk included in the group with higher medical costs (OR = 1.57, 95% CI 1.03–2.40), compared to the elderly who do road activities four days or more a week. Based on this study it can be concluded that physical activity, especially walking that is carried out regularly can help maintain blood pressure at normal levels, thereby reducing the need for medication use and costs.

Based on this information, the assumption of costs will be lower in elderly physically active hypertension. Elderly people who do not do walking activities for a week have a higher risk of being included in the group with higher medical costs compared to those who walk regularly on a weekly basis. Physical activity is less a risk factor for hypertension in the elderly. Physical activity has an important role in controlling chronic diseases and can be an effective intervention alternative for hypertension, especially in the elderly.

CONCLUSION

Physical activity that is carried out regularly and consistently can reduce blood pressure, improve cognitive abilities and improve quality of life in elderly people who suffer from hypertension. The use of drugs tends to decrease in elderly hypertensive patients who exercise regularly. This can reduce the cost requirements used for treatment.

In general, it is recommended to increase physical activity such as walking, elderly gymnastics and low impact aerobic exercise with moderate intensity as one of the effective non-pharmacological approaches to reduce blood pressure in hypertensive patients. Need more research and consistent methods to understand the effectiveness of physical activity in hypertensive patients.

ACKNOWLEDGEMENTS

This text was written to fulfill the requirements as a Masters in the Faculty of Public Health at the University of Indonesia and we would like to thank the lecturers and mentors for their motivation and guidance in the preparation of this systematic review.

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