Relationship of age, gender, hypertension history, and vulnerability perception with physical exercise compliance in elderly[☆]

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Abstract
Objective: The purpose of this study was to determine the relationship between the history of hypertension and the perception of susceptibility with the level of adherence to physical exercise in the elderly who experienced hypertension.
Methods: The study used a cross-sectional design. A total of 108 elderly people who had hypertension were selected using purposive sampling technique. Chi-square was used to analyze the data.
Results: The results showed a significant relationship between family history (p-value = 0.037), the perception of susceptibility (p-value = 0.018) to physical exercise adherence in the elderly with hypertension, while age and sex did not have a significant relationship.
Conclusions: Screening and developing community-based nursing strategies, providing health information early, and innovations in the development of physical training need to be done to motivate the elderly to do physical exercise.
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Introduction

Increasing life expectancy (UHH) will cause an increase in the elderly population.[1] This population growth requires special attention where the elderly will experience an aging process and experience some changes that will lead to health problems, one of which is hypertension. This

condition is one of the targets of the 2015–2030 Sustainable Development Goals (SDGs) program on health aspects in terms of prevention and treatment of non-communicable diseases such as elderly hypertension.

The results of the reporting of the Kementerian Kesehatan Republik Indonesia,[2] the increase in UHH in Indonesia is estimated to reach 72.2 years in 2030–2035. Data from the Central Bureau of Statistics (BPS) were recorded data, the elderly population in Indonesia in 2010 reached 13,819,082 people or 7.58% of the total population in Indonesia and is expected to increase to 36,000,000 by 2025. West Java is ranked fourth with the largest elderly population in both urban and rural areas after Yogyakarta (57.21%). The Depok area is one of the cities in West Java, where the elderly population in 2014 reached 105,933 of the total population of 2,033,508 inhabitants.[2]

Hypertension is one of the non-communicable diseases that is often experienced by the elderly and increases susceptibility to complications of other chronic diseases.[3] Hypertension is a major risk factor for elderly mortality among the largest globally such as ischemic heart disease and stroke.[4]

The results of 2013 Riset Kesehatan Dasar (Riskesdas) showed hypertension to be the highest chronic disease experienced by elderly with a percentage of 57.6% and a cause of death at the age of 60 years and over.[5] Women have more hypertension than men. Whereas men have more heart disease compare to women. Risk factors cause high prevalence of elderly hypertension in line with lifestyle changes such as smoking, alcohol use, lack of activity, inadequacy in stress management and a high-sodium and high-fat diet.[1] The increased incidence of hypertension is also indirectly influenced by family history of previous hypertension.[6] The incidence of hypertension in the elderly is often poorly controlled due to the perception of the elderly that having high blood pressure is a natural thing to happen in old age.[7]

Method

Design

The research method uses quantitative analytic description method with a cross-sectional design. The study was conducted in January–June 2016 in the working area of one community health center in Depok City, Indonesia. Site selection is based on the results of annual data collection and survey results related to the highest incidence of elderly hypertension in the city of Depok.

Sample

A total of 108 samples were selected by purposive sampling technique. The inclusion criteria in this study were elderly who were recorded in the health center, living with family members and able to do physical exercise actively and passively.

Table 1 The characteristics of the elderly with hypertension ($n = 108$).

Independent variable	f	%
Characteristics of the elderly		
Age		
60–69 year	73	67.6
$\geq$70 year	35	32.4
Gender		
Women	79	73.1
Man	29	26.9
Family hypertension history		
There is no history of hypertension	39	36.1
There is history of hypertension	69	63.9
Perception of hypertension vulnerability		
Good	45	41.7
Less	63	58.3
Physical exercise compliance		
Good	48	44.4
Less	60	55.6

Research instrument

The instrument used in this study is a questionnaire consisting of 2 parts. Part A contains the characteristics of the elderly including age, gender, and history of hypertension. Part B contains the perception of the elderly on the vulnerability of hypertension.

Procedure

Researchers searched for data of elderly hypertension on the record of the health center and cross-checked the data across the working area of the health center. The researcher made a home visit to the selected elderly people. The elderly were asked to fill out a questionnaire after getting an explanation related to the purpose of the study, how to fill it, and informed consent. Data analysis was done after the questionnaire is complete.

Result

The result of this study showed that most of the respondents were women (73.1%). The majority of elderly people who experience hypertension have a family history with the same disease problems. Perceptions of elderly vulnerability to hypertension were still limited (58.3%). More than half of the elderly who experience hypertension (55.6%) have a poor level of adherence to physical exercise. Table 1 shows the characteristics of the respondents.

Family history with hypertension has a significant relationship with the level of adherence (p-value = 0.037). Elderly people who do not have a family history of hypertension will have a chance of 0.056 times to comply with physical exercise. Age and gender do not have a significant relationship with the level of compliance with physical exercise (p-value > 0.05). Perception of vulnerability with physical exercise compliance has a significant relationship

Table 2 Hypertension with the level of compliance toward physical exercise (n = 108).

Variable	Compliance		OR (95% CI)/(p-value)
	Good n (%)	Less n (%)	
Age			
60–69 year	36 (49.3%)	37 (50.7%)	1.865 (0.206)
More than 70 year	12 (34.3%)	23 (65.7%)	
Gender			
Women	36 (45.6%)	43 (54.4%)	1.186 (0.865)
Man	12 (41.4%)	17 (58.6%)	
Family hypertension history			
There is no history of hypertension	23 (59.0%)	16 (41.0%)	2.530
There is history of hypertension	25 (36.2%)	44 (63.8%)	1131–5659 (0.037)
Perception of hypertension vulnerability			
Good	27 (58.7%)	19 (25.6%)	2.774
Less	21 (33.9%)	41 (66.1%)	1.262–6.101 (0.018)

(p-value < 0.05). Elderly with a good perception of hypertension susceptibility is 2.77 times. The compliance results are shown in Table 2.

Discussion

The results showed that the most hypertension occurred at the age of 60–69 years, followed by elderly aged 70 years with a percentage of 32.4%. This age belongs to the elderly group, and the elderly group is at high risk. The age factor is one of the factors that play an important role in the incidence of hypertension. The older the people, the more changes in physical and biological. Changes that occur are part of the vulnerability, which becomes one of the predisposing factors for health status that becomes worse.[8] The findings showed that many elderly people aged 60–69 years do an unbalanced lifestyle and still consume a lot of fat intake such as fried foods. Most of the elderly in the health center area highlighted that consuming fried foods have become a habit that cannot be avoided. Elderly have a habit of consuming excess fat, fast food, fatty foods and high cholesterol.[9]

Women have the largest proportion with the incidence of hypertension as many as 79 people (73.1%). This study is in line with the prevalence of hypertension in America, where women aged 65–74 years and women aged ≥ 75 years have the highest percentage of hypertension compared to men.[10] The high incidence of hypertension in elderly women is due to hormonal changes. Women who have experienced menopause will be at a higher risk of developing hypertension due to decreased estrogen levels, which are considered to be able to protect the occurrence of atherosclerosis in blood vessels.[11]

A total of 63.9% elderly in this study have a family history of hypertension. The finding was in line with the research result that stated that clients who have a family history of hypertension are at risk of developing similar hypertension as much as three times.[12] Elderly people in the health center area mostly revealed that their parents have hypertension.

Researchers thought that the incidence of hypertension in the elderly with a family history was spurred on from the habits carried out by the previous family. Previous bad family habits such as unbalanced diet, unhealthy lifestyle will be indirectly taught to other family members.

The results showed that 58.3% of the elderly had a lesser perception of vulnerability. The result indicates the absence of seriousness of the elderly against the risks that can arise from hypertension. Elderly states that hypertension is a normal problem in the elderly. The elderly are also less able to understand the risks that can occur from uncontrolled hypertension. The perceived vulnerability of hypertension experienced by the elderly is one of the predisposing factors for having worse health status, stress and despair.[8] Elderly with hypertension in this study have less physical compliance. The results showed that there were 55.6% of elderly people who had less compliance with physical exercise. Similar percentages are found in the West Java region, where the elderly who live in rural and urban areas only 9.35% exercise from the total of the elderly population.

Other studies explain that several supporting factors influence physical exercise adherence in the elderly. Some factors that can influence are the bad weather, work, laziness, unavailability of time, lack of family and social support, and chronic illnesses experienced.[13]

The results of the bivariate analysis showed no significant relationship between age and adherence to physical exercise (p = 0.206). The results obtained are following research conducted by Churilla and Ford (2010) which shows that elderly with hypertension at any age will increase adherence in physical exercise.[14] Elderly with increasing age in every year who have chronic diseases such as hypertension will tend to have low intensity in doing physical exercise.[15]

The is consistent with research conducted by Ismail and Qadir which states that the main factor of someone's disobedience in carrying out a particular activity is influenced by forgetfulness, which has a significant relationship to age (p = 0.000).[16] The older the person, the more decrease in

the level of compliance to physical exercise.[17] According to the researchers' analysis, the absence of an age relationship with physical adherence in this study was due to the inequality in the number of respondents dominated by ages 60–69 years. Therefore, nurses in health promotion related to physical training in the elderly must be able to include information that can be understood by various classifications of age.

This study shows a significant relationship between family history of hypertension and the level of adherence, which is indicated by the value of $p = 0.037$. Elderly people who do not have a previous family history with hypertension are likely to adhere to physical exercise by 0.056 times. Elderly people who have a family history with the same health problems will get better support and get more information from the family to maintain their health.[18] Previous family health history can provide information related to habits that have been done so that it can be compared with the habits of the elderly at this time. Besides knowing the previous family history can provide data on whether hypertension owned by the elderly is genetic, so it can help identify the appropriate health promotion.

Gender does not have a significant relationship to adherence in physical exercise with a p-value of 0.865. The finding can occur due to the comparison between the numbers of older women more than men. The results of the study following the research conducted by Puspita that showed there was no significant relationship between gender and adherence to treatment with a value of $p = 0.366$.[19] The results of other studies also show that gender does not provide significant differences in the level of compliance.[20] The results of the study were not in line with the research conducted by Hasbi in which the research showed that gender has a meaningful relationship with physical exercise adherence.[21]

The results showed a significant relationship between the susceptibility of the susceptibility to the obedience of physical exercise for elderly people with a p-value of 0.018 times. Good perception of vulnerability will increase physical exercise compliance by 2.78 times compared to elderly who have less susceptibility to vulnerability. This study showed the same result as research conducted by Adawiyah (2014) that highlighted there is a correlation between perceptions of vulnerability and hypertension prevention behavior with a correlation value of 0.60 and p-value of 0.0001.[22] A person who has a good perception of vulnerability will have good preventive behavior to avoid the big risks that will arise. Elderly with a good perception of vulnerability will take better actions to reduce the risk of complications or seriousness of the problems they have.[23] Compliance with physical exercise performed by elderly hypertension is a good coping mechanism from the elderly to avoid complications. Health education that has often been done related to hypertension makes elderly people have better knowledge. Thus this indicates the success of health education. This should be maintained and developed to make the elderly have broad knowledge and can be used as one of the factors that increase the interest of the elderly in a healthy lifestyle.

Characteristics of respondents were elderly, who were predominantly aged 60–69 years with female gender, had a history of hypertension. Perception of vulnerability, which is owned by the elderly, is still considered lacking. Elderly hypertension in one of the health centers in Depok City shows that they still have less compliance with physical exercise. The relationship of family history showed a significant relationship to the level of physical exercise adherence in the elderly with hypertension. The relationship of susceptibility perception showed a significant relationship to the level of physical exercise adherence in elderly hypertension.

Conflict of interests

The authors declare no conflict of interest.

Acknowledgements

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