

Overview of Physical Activity in Elderly People with Hypertension in Ngemplak District, Boyolali Regency

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ABSTRACT

Background & Objective: Older adults experience physiological changes, including in the cardiovascular system, which can potentially cause hypertension. In Central Java Province, the prevalence of older adults reaches 15.46%, while in Boyolali District there are 14.83% or 160,188 people aged over 60 years. Physical activity plays an important role in controlling blood pressure and preventing complications of hypertension, but many elderly people have low to moderate levels of physical activity. This study aims to describe the level of physical activity in elderly people with hypertension in Ngemplak Subdistrict, Boyolali Regency. **Method:** A quantitative descriptive method was used with 92 elderly respondents selected using accidental sampling. The research instrument was the GPAQ (Global Physical Activity Questionnaire) from the WHO. Data collection was conducted on June 9, 2025, in the Ngemplak Community Health Center working area. **Result:** The results showed that 52.17% of respondents had a moderate level of activity, 31.52% had a light level, and 16.30% had a heavy level. **Conclusion:** The conclusion of this study is that the majority of elderly people with hypertension in the area have moderate physical activity. These findings are expected to be a reference for health workers in designing promotion and education programs, as well as motivating the elderly to increase regular physical activity to prevent worsening hypertension.

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Introduction

Increased life expectancy in various countries, including Indonesia, has led to significant growth in the elderly population. The aging process causes physiological

changes in various body systems, including the cardiovascular system, which leads to a decrease in blood vessel elasticity and an increased risk of hypertension (Lestari et al., 2021; Roufuddin et al., 2022). Hypertension is a global health problem that is often referred to as a silent killer because it rarely shows early symptoms, but has the potential to cause serious complications such as stroke, coronary heart disease, and kidney failure (AHA, 2024). According to the WHO (2023), the global prevalence of hypertension in the elderly reaches 26.4% and is estimated to rise to 29.2% by 2025. In Indonesia, the prevalence among the elderly reaches 32.5% (BPS, 2023).

Globally, the WHO (2023) reports that the prevalence of hypertension among the elderly reaches 26.4% and is estimated to increase to 29.2% by 2025. In Indonesia, the prevalence of hypertension among the elderly reaches 32.5% (BPS, 2023). Central Java Province ranks fourth in terms of national hypertension prevalence, with Boyolali Regency as one of the areas with a high case load. Data from the Boyolali District Health Office (2023) shows that Ngemplak Subdistrict ranks first in the number of hypertension cases, with 19,279 patients, 81.9% of whom are elderly.

Physical activity plays an important role in controlling blood pressure in the elderly. The WHO (2021) recommends a minimum of 150 minutes per week of moderate-intensity physical activity or 75 minutes per week of vigorous-intensity physical activity to maintain cardiovascular health. Regular physical activity can strengthen the heart muscle, improve blood vessel elasticity, and help control body weight and blood lipid levels (Manungkalit et al., 2024). However, previous studies have shown that many elderly people with hypertension have low to moderate activity levels, due to work factors, sedentary habits, lack of sports facilities, and low motivation (Roslaini et al., 2022; Gati et al., 2023).

In Ngemplak District, public exercise facilities are limited, and elderly participation in activities such as health exercises remains low. Preliminary study results in February 2025 showed that most elderly people do not regularly participate in elderly exercises or structured physical activities due to time constraints, distance, or lack of interest. In fact, increasing physical activity is one of the most effective and inexpensive non-pharmacological interventions to prevent the worsening of hypertension.

Objective

This study aims to describe the level of physical activity among elderly people with hypertension in Ngemplak District, Boyolali Regency as a basis for the prevention and management of hypertension through the promotion of a healthy lifestyle.

Method

This study used a quantitative descriptive design. The study was conducted in the working area of the Ngemplak Community Health Center, Boyolali, on June 9, 2025. The population consisted of all elderly people with hypertension (164 people), with a sample of 92 respondents selected using accidental sampling. The inclusion criteria included elderly people with blood pressure $\geq 140/90$ mmHg and who were willing to be respondents. The research instrument was the GPAQ questionnaire (WHO, 2021). The data were analyzed univariately and presented in frequency distribution and percentages.

Results

Characteristics of Respondents Based on Gender at the Ngemplak Community Health Center, Ngemplak District, Boyolali Regency

TABLE 1. Frequency Distribution of Respondents Based on Gender at the Ngemplak Community Health Center, Ngemplak District, Boyolali Regency

No.	Gender	Frequency (f)	Percentage (%)
1.	Male	39	42.39%
2.	Female	53	57.61%
Total		92	100

Source: Primary Data

Based on Table 1, it is known that most respondents at the Ngemplak Community Health Center were women, namely 53 people (57.61%).

Characteristics of Respondents Based on Occupation at the Ngemplak Community Health Center, Ngemplak District, Boyolali Regency.

TABLE 2. Frequency Distribution of Respondents Based on Occupation at Ngemplak Community Health Center, Ngemplak District, Boyolali Regency

No.	Occupation	Frequency (f)	Percentage (%)
1.	Merchant	15	16,30
2.	Private employee	16	17,39
3.	Farmer	27	29,35
4.	Civil servant	2	2,17
5.	Housewife	13	14,13
6.	Not working	19	20,65
Total		92	100 %

Source: Primary Data

Based on Table 2, it is known that most respondents at the Ngemplak Community Health Center in Ngemplak District, Boyolali Regency, work as farmers, totaling 27 people with a value of 29.35%, and the least common occupation is civil servant, totaling 2 people with a value of 2.17%.

Overview of Physical Activity in Elderly People with Hypertension at the Ngemplak Community Health Center, Ngemplak District, Boyolali Regency

TABLE 3. Frequency Distribution of Physical Activity in Elderly People with Hypertension at the Ngemplak Community Health Center, Boyolali District, based on the results of the GPAQ questionnaire

No.	Total MET	Category	Frequency (f)	Percentage (%)
1.	MET \geq 3000	Heavy	15	16,30
2.	MET \geq 600 – 3000	Moderate	48	52,17
3.	MET < 600	Light	29	31,52
Total			92	100 %

Source: Primary Data

Based on Table 3, it is known that most respondents had a moderate level of physical activity, namely 48 people with a value of 52.17%, followed by light physical activity in 29 people with a value of 31.52% and heavy physical activity in 15 people with a value of 16.30%.

Discussion

Respondent Characteristics Based on Gender

Based on the results of a study conducted on 92 elderly respondents with hypertension in the Ngemplak Community Health Center working area, it was found that there were 39 male respondents with a percentage of 42.39% and 53 female respondents with a percentage of 57.61%. This figure shows that more female elderly respondents experience hypertension. Women have natural protection against hypertension, largely due to the influence of the hormone estrogen. However, as they age, women's risk of developing hypertension increases, which can then develop into coronary heart disease. The uniqueness of hypertension in women is closely related to factors such as pregnancy, menopause, and the use of oral contraceptives (Gultom, 2022).

Gender is one of the important determinants that affect blood pressure. In general, there is an assumption that hypertension is more common in men. However, research by Gillis and Sullivan (2016) shows that women have a stronger anti-inflammatory immune profile, which can function as a compensatory mechanism for increased blood pressure, unlike men who tend to have a more pro-inflammatory immune profile. Nevertheless, research conducted by Wahyuni and Eksanoto (2019) also shows that women are more prone to hypertension than men, with a prevalence of 27.5% in women and only 5.8% in men. The increase in the risk of hypertension in women occurs significantly after menopause, i.e., at the age of 45 years and above. Before menopause, the hormone estrogen plays a protective role by increasing HDL (High Density Lipoprotein) cholesterol levels. Low HDL levels and high LDL (Low Density Lipoprotein) cholesterol levels can trigger atherosclerosis, which in turn causes an increase in blood pressure (Ghosh, Mukhopadhyay, & Barik, 2016). Another finding from the study by Livana and Basthomi (2020) in Kendal City shows that gender is significantly associated with the incidence of hypertension and is a statistically significant risk factor ($p = 0.000$; $R = 0.316$).

Respondent Characteristics Based on Occupation

Based on the research results, the most common occupation among the elderly was farming, with 27 people or 29.35%, followed by 19 people (20.65%) who were unemployed, 16 people (17.39%) who were private employees, 15 people (16.30%) who were traders, 13 people (14.13%) who were housewives, and the smallest number, 2 people (2.17%), who were civil servants. This is in line with the geographical conditions in Ngemplak District, where there are still many rice fields and vast fields, so many elderly farmers can be found working in the fields. Housewives are also the second most common occupation after farmers, dominated by elderly women who stay at home to take care of their family members.

This is in line with research conducted by Wulandari (2025), who stated in her research that respondents who had jobs were more likely to be older than those who did not work (91.8%). On the other hand, work patterns are shaped by the type of work, where people involved in jobs that require physical activity are potentially more protected from the risk of hypertension compared to individuals who have jobs with minimal physical activity (Rahayuni, 2024).

Description of Physical Activity in Elderly People with Hypertension at the Ngemplak Community Health Center, Ngemplak District, Boyolali Regency

Based on the research data, it was found that the average physical activity performed by elderly people with hypertension in the Ngemplak Community Health

Center work environment was moderate physical activity with an average MET value of 1686.68. The minimum MET value, which is categorized as light physical activity, was 140 METs, while heavy physical activity was 10,940 METs. Of the 92 elderly individuals with hypertension, 29 were found to have light physical activity, i.e., a MET value <600, or 31.52% of the total sample. Forty-eight elderly individuals with hypertension had moderate physical activity, i.e., a total MET value ≥ 600 -3000, which represented 52.17% of the total sample. A total of 15 elderly people with hypertension in the Ngemplak Community Health Center work environment had heavy physical activity or a total MET value ≥ 3000 , which when presented as a percentage was 16.30% of the total sample.

Based on the results of research conducted using the GPAQ questionnaire, it was found that the average MET score for low physical activity levels was obtained from elderly people with hypertension who were unemployed or housewives, while the total physical activity score for moderate levels was obtained from elderly people who still had jobs such as farmers, traders, and private employees. The MET score for heavy activity levels was obtained from elderly people whose occupation was farming. The type of work affects the risk of hypertension due to its relationship with an individual's level of physical activity. The highest rate of hypertension was found in the group that did not have a job. Consistent physical inactivity can increase the likelihood of hypertension in individuals who are not working. Regular exercise is very helpful for those with mild hypertension, as it can help lower blood pressure (Ekarini et al., 2020).

Physical activity involves body movements that require energy to perform various tasks, from waking up to going back to sleep, depending on muscle strength and type of work. Physical activity is a fundamental element of human life. Every action taken by humans to fulfill their needs is categorized as physical activity (Makawekes et al., 2020). Researchers argue that with technological advances, people can now access physical activity through smartphones, which helps them carry out their daily routines. Now, there are many individuals who are trapped in smartphone use, thereby reducing their level of physical activity. This study shows that the majority of women who participated in the survey had a moderate level of physical activity. Researchers also argue that various outdoor activities can contribute to increased physical activity.

Based on the research conducted, it was found that the activity patterns of the respondents were in the moderate physical activity category. This finding is in line with research by Handayani, et al (2023), which revealed that most physical activities in the pre-elderly group were in the moderate category (47%). Research by Rahmanda, et al (2022) also supports these results, showing that the activities of respondents in the pre-elderly category were mostly in the moderate category (79.6%). In addition, research by Carmona-Torres, et al (2021) from Spain showed that 2635 participants (44.1%) had low activity patterns. Occupation also contributes to this, as many respondents who work as farmers, traders, and laborers may exhibit moderate activity patterns, because they perform physical activities that are not too strenuous on a continuous basis and have variations in intensity and duration of work. These types of jobs typically involve a combination of physical activities with mental or managerial tasks, with a more moderate intensity compared to jobs that require constant maximum physical effort. Regarding gender, it was found that women tend to engage in moderate-intensity physical activities more often, such as walking or

leisurely cycling. This may be related to women's greater involvement in household chores or other light physical activities compared to men. Sociocultural factors also play a role in determining the choice of physical activities, where women may prefer activities that are less strenuous but still have a positive impact on health. Meanwhile, men's physical activity levels tend to be higher, related to their jobs that require more intense physical movement.

Conclusion

Respondent Characteristics Based on Gender and Occupation, this shows that the majority of respondents are female. Respondent characteristics based on occupation show that the majority of elderly people work as farmers.

Overview of Physical Activity in Elderly People with Hypertension, physical activity among elderly people with hypertension in the Ngemplak Community Health Center working area is dominated by the moderate physical activity category.

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