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The Relationship Between Participation in the Chronic Disease Management Program (Prolanis) and Physical Activity with Blood Pressure Stability Among Older Adults in the Working Area of Andoolo Community Health Center

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Absctract. Hypertension in the elderly requires comprehensive management to prevent cardiovascular complications. This study aims to determine the relationship between Prolanis participation and physical activity with blood pressure stability in the elderly. This quantitative study utilized a cross-sectional design. A sample of 35 respondents was selected using a total sampling technique. Program participation and physical activity level data were collected through questionnaires, while blood pressure stability was sourced from medical records in April 2026. Bivariate data analysis was performed using Fisher's Exact Test.The results showed that the majority of respondents actively participated in Prolanis (82.9%), engaged in heavy physical activity (74.3%), and had stable blood pressure (85.7%). Statistical analysis revealed no significant relationship between Prolanis participation and blood pressure stability (p = 0.195), and no significant relationship between physical activity level and blood pressure stability (p = 1.000).The absence of a statistical relationship was driven by the homogeneity effect and the ceiling effect, where the elderly's blood pressure was already uniformly stable (homogeneous) due to routine program attendance and regular physical labor (farming). In conclusion, from a community nursing clinical perspective, the combination of Prolanis and daily physical activity significantly contributes to maintaining cardiovascular health in the elderly, despite being statistically insignificant due to data uniformity. Public health centers (Puskesmas) are advised to maintain the Prolanis program and enhance independent monitoring regarding medication adherence and low-salt diet compliance at home

Introduction

Hypertension is a major global health challenge that contributes to life-threatening complications, including myocardial infarction, kidney failure, and stroke. According to the World Health Organization (WHO), approximately 1.3 billion adults worldwide have

hypertension, with nearly 46% remaining unaware of their condition [1]. In Indonesia, the 2023 Indonesian Health Survey (Survei Kesehatan Indonesia, SKI) reported a national hypertension prevalence of 30.8%, with the highest burden observed among older adults [2]. To address this issue, the Indonesian government has implemented the Chronic Disease Management Program (Program Pengelolaan Penyakit Kronis, Prolanis) through the National Health Insurance Agency (BPJS Kesehatan), aiming to provide continuous health monitoring and improve the management of chronic diseases among participants [3]. However, the effectiveness of this program in maintaining blood pressure stability largely depends on participants' consistent engagement in its scheduled activities [4].

Nevertheless, monitoring and evaluation data from BPJS Kesehatan of South Konawe Regency in January 2026 indicated that the Controlled Prolanis Participant Ratio (Rasio Peserta Prolanis Terkendali, RPPT) in Southeast Sulawesi had not reached the minimum target of 5% [5]. This finding suggests that a substantial proportion of hypertensive patients in the Andoolo Community Health Center service area continue to have uncontrolled blood pressure. These findings are consistent with previous research by Nurpuspitasari, which demonstrated that regular participation in Prolanis activities was positively associated with improved blood pressure control [6]. One of the core interventions offered through Prolanis is elderly exercise, which has been shown to reduce blood pressure through vascular vasodilation and improved cardiovascular function [7,8]. Similar benefits of physical activity have also been reported in local community studies conducted in Soropia by Inriani et al. [9] and in Sampara by Soputan [10].

Despite the documented benefits of elderly exercise, unstable blood pressure remains prevalent among older adults attending the Andoolo Community Health Center. This evidence highlights an important research gap, suggesting that blood pressure stability may also be influenced by individual characteristics, such as age, sex, and educational level, as well as daily physical activity performed outside the Prolanis program [11,12]. As Andoolo is predominantly a rural community, many older adults are engaged in physically demanding agricultural activities, including farming and gardening. Excessive or unmonitored physical activity may adversely affect blood pressure regulation among hypertensive individuals [13,14]. Therefore, this study aimed to examine the relationships between individual characteristics, participation in the Prolanis program, physical activity, and blood pressure stability among older adults in the service area of the Andoolo Community Health Center.

Method

This quantitative study employed an analytical correlational design with a cross-sectional approach. The study was conducted in May 2026 in the service area of the Andoolo Community Health Center, South Konawe Regency, Southeast Sulawesi Province, Indonesia. The study population consisted of all older adults with hypertension who were actively registered in the Chronic Disease Management Program (Program Pengelolaan Penyakit Kronis, Prolanis) in 2025, totaling 35 participants. A total sampling technique was applied, whereby all eligible individuals in the population were included as study participants, resulting in a final sample of 35 respondents [1,2].

The independent variables were participation in the Prolanis program and physical activity, while the dependent variable was blood pressure stability. Participation in Prolanis was assessed using attendance records over the preceding three months and categorized as active (attendance ≥70%) or inactive (attendance <70%). Daily physical activity performed outside the Community Health Center schedule, including farming and gardening, was assessed using the validated International Physical Activity Questionnaire (IPAQ) and classified into low, moderate, and high physical activity levels [3]. Blood pressure stability was determined from medical record

observation sheets for April 2026 and verified through direct measurement using a digital sphygmomanometer. Blood pressure was categorized as stable (systolic 120–139 mmHg and diastolic 70–79 mmHg) or unstable (systolic ≥140 mmHg and/or diastolic ≥90 mmHg) according to the World Health Organization (WHO**)** recommendations and the clinical protocol of the Andoolo Community Health Center [4].

Data were collected through structured interviews and physical examinations. Data processing included editing, coding, data entry, and data cleaning. Descriptive (univariate) analysis was performed to summarize respondents' characteristics, while bivariate analysis was conducted using the Chi-square (χ^2) test with a significance level of $p < 0.05$ to examine associations between variables. The magnitude of association was estimated using the Prevalence Ratio (PR)**.**

Results and Discussion

Participant Characteristics

a total of 35 older adults with hypertension who were enrolled in the Chronic Disease Management Program (Prolanis) at the Andoolo Community Health Center participated in this study. The demographic characteristics of the respondents are presented in **Table 1**.

Table 1. Demographic Characteristics of Participants

Characteristics	n	%
Sex		
Female	27	77.1
Male	8	22.9
Age (years)		
46–55	6	17.1
56–65	18	51.4
>65	11	31.4
Educational Level		
No formal education	4	11.4
Primary school	23	65.7
Junior high school	4	11.4
Senior high school	3	8.6
Bachelor's degree	1	2.9
Occupation		
Homemaker	20	57.1
Farmer/Gardener	12	34.3
Trader	1	2.9
Other	2	5.7
Duration of Hypertension		
1-2 years	29	82.9
3-5 years	6	17.1

The majority of participants were female (77.1%), aged 56–65 years (51.4%), had completed primary school education (65.7%), worked as homemakers (57.1%) or farmers/gardeners (34.3%), and had been diagnosed with hypertension for 1–2 years (82.9%).

Distribution of Study Variables

The distributions of Prolanis participation, physical activity, and blood pressure stability are presented in **Table 2**.

Table 2. Distribution of Study Variables

Variable	n	%
Participation in Prolanis		
Active	29	82.9
Inactive	6	17.1
Physical Activity		
Vigorous	26	74.3
Moderate	9	25.7
Blood Pressure Stability		
Stable	30	85.7
Unstable	5	14.3

Most participants actively attended Prolanis activities (82.9%), engaged in vigorous physical activity (74.3%), and demonstrated stable blood pressure (85.7%).

Bivariate Analysis

The associations between Prolanis participation, physical activity, and blood pressure stability were analyzed using Fisher's Exact Test.

Table 3. Association Between Participation in Prolanis and Blood Pressure Stability

Variable	Blood Pressure Stability		Total	P-Value
	Stable	Unstable		
Prolanis Participation				
Active	26	3	29	0,195
Inactive	4	2	6	
Physical Activity				
Moderate	8	1	9	1,000
Heavy / Strenuous	22	4	26	

Fisher's Exact Test showed no statistically significant association between participation in Prolanis and blood pressure stability (p = 0.195), or between physical activity and blood pressure stability (p = 1.000). Since both p-values exceeded the significance threshold of 0.05, neither independent variable was significantly associated with blood pressure stability among older adults in the Andoolo Community Health Center service area.

Association Between Participation in Prolanis and Blood Pressure Stability

Clinically, older adults who actively participated in the Prolanis program exhibited a high proportion of stable blood pressure (89.7%). The Prolanis program at the Andoolo Community Health Center, which regularly provides health examinations, elderly exercise sessions, and medication counseling, appears to contribute positively to maintaining participants' cardiovascular health. The absence of a statistically significant association (p = 0.195) is likely attributable to a ceiling effect, whereby most participants had already achieved stable blood pressure due to the successful implementation of the program. Additionally, the relatively small sample size may have limited the statistical power to detect significant differences.

Association Between Physical Activity and Blood Pressure Stability

Participants with both moderate and vigorous physical activity demonstrated similarly high rates of blood pressure stability. The non-significant result (p = 1.000) may be explained by the absence of participants with low or sedentary physical activity. The rural environment of Andoolo encourages older adults to remain physically active through routine farming and gardening activities. Physiologically, regular physical activity enhances vascular endothelial function by increasing nitric oxide production, promoting vasodilation, improving peripheral circulation, and contributing to cardiovascular protection. Consequently, both moderate and vigorous physical activity may provide comparable benefits in maintaining blood pressure stability among older adults in this community.

Conclusion

This study conducted at the Andoolo Community Health Center found that most older adults with hypertension were women aged 56–65 years, had low educational attainment, worked in agricultural or domestic sectors, and had been diagnosed with hypertension for 1–2 years. Participation in the Chronic Disease Management Program (Prolanis) and engagement in daily physical activity, including moderate and vigorous activities, were consistently high. Clinically, these factors may contribute to improved hemodynamic stability and the maintenance of vascular elasticity. However, no statistically significant association was observed, which may be attributable to the homogeneity of participants resulting from the well-established implementation of the Prolanis program, as well as the relatively small sample size.

The Andoolo Community Health Center is encouraged to maintain personalized health education using simple and accessible language while providing regular recognition to motivate older adults to remain actively engaged in the program. Family members should continue to provide social support and promote a low-stress home environment to facilitate optimal blood pressure control. For nursing education institutions, these findings may serve as a reference for gerontological and community nursing education. Future studies are recommended to employ longitudinal designs, recruit larger samples, and control for potential confounding factors, such as medication adherence and dietary sodium intake.

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