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LEVEL of PARTICIPATION in PROLANIS EXERCISE and BLOOD PRESSURE CONTROL among ELDERLY HYPERTENSIVE PATIENTS in KARTOHARJO, MAGETAN

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ABSTRACT

Hypertension remains one of the most prevalent non-communicable diseases among older adults and is a major contributor to cardiovascular complications when blood pressure is not adequately controlled. Prolanis (Chronic Disease Management Program) exercise is one of the non-pharmacological interventions that can support blood pressure control among elderly patients with hypertension. This study aimed to determine the relationship between the level of participation in Prolanis exercise and blood pressure control among elderly patients with hypertension at Kartoharjo Community Health Center, Magetan Regency. An analytical observational study with a cross-sectional design was conducted involving 53 respondents selected through simple random sampling from 110 elderly patients with hypertension registered in the Prolanis hypertension class. Data on the level of participation in Prolanis exercise were obtained from six-month attendance records, while blood pressure control status was assessed based on blood pressure measurements. Data were analyzed using the Chi-square test with a 95% confidence level. The results showed that 41 respondents (77.4%) were classified as active participants in Prolanis exercise, while 12 respondents (22.6%) were classified as inactive. Furthermore, 38 respondents (71.7%) had controlled blood pressure, while 15 respondents (28.3%) had uncontrolled blood pressure. Statistical analysis showed a significant relationship between the level of participation in Prolanis exercise and blood pressure control ($p = 0.001$), with a contingency coefficient of 0.461, indicating a moderate association. The study concludes that active participation in Prolanis exercise is significantly associated with blood pressure control among elderly patients with hypertension. Strengthening participation in Prolanis exercise may therefore support hypertension management at the primary healthcare level.

Hypertension; Prolanis exercise; Blood pressure control; Elderly; Primary healthcare

INTRODUCTION

Hypertension remains one of the most common health problems worldwide, including in Indonesia, particularly among older adults. It is often referred to as a silent killer because it may occur without clear symptoms and, when uncontrolled, can lead to serious complications such as stroke, heart disease, and impaired kidney function (WHO, 2023). Approximately 1.28 billion adults worldwide have hypertension, with most living in developing countries, and only about 21% achieve adequate blood pressure control (WHO, 2023). Hypertension prevalence also increases with age, reaching 71.6% among adults aged 60 years and above, compared with 23.4% among those aged 18–39 years and 52.5% among those aged 40–59 years (Fryar et al., 2024).

In Indonesia, hypertension remains a major public health problem, particularly among older adults. Its management requires not only pharmacological treatment but also consistent non-pharmacological interventions. One approach is Prolanis (Chronic Disease Management Program) exercise, a physical activity program provided through the chronic disease management program administered by BPJS Kesehatan. Regular aerobic exercise can promote vasodilation, improve vascular elasticity, reduce peripheral vascular resistance, and decrease sympathetic nervous system activity, thereby contributing to blood pressure reduction (de Barcelos et al., 2022). In a study conducted among hypertensive patients, Inriani et al. (2021)

found that Prolanis exercise was effective in reducing blood pressure. Similarly, Henirispawati et al. (2024) reported that Prolanis exercise contributed to a reduction in blood pressure among patients with hypertension. Warjiman et al. (2021) also found a significant reduction in blood pressure following Prolanis exercise. However, the benefits of exercise may depend on consistent participation. Oktarina et al. (2023) reported that participation in the Prolanis exercise program was associated with blood pressure among patients with hypertension. Kondoj et al. (2025) also found that the level of participation in Prolanis activities was associated with program-related outcomes.In East Java, hypertension prevalence reaches 36.3%, exceeding the national prevalence of 30.8% (Dinas Kesehatan Kabupaten Magetan, 2024). In Magetan Regency, hypertension was reported as the most common non-communicable disease recorded at community health centers in 2024. At UPTD Puskesmas Kartoharjo, 498 hypertensive patients were recorded in 2025. The health center also conducts a Prolanis hypertension class that provides health examinations, education, and regular Prolanis exercise. A preliminary study conducted in April 2026 found that, among 110 registered participants, a considerable number did not regularly participate in Prolanis exercise sessions, indicating that participation remained suboptimal.

In East Java, hypertension prevalence reaches 36.3%, exceeding the national prevalence of 30.8% (Dinas Kesehatan Kabupaten Magetan, 2024). In Magetan Regency, hypertension was reported as the most common non-communicable disease recorded at community health centers in 2024. At UPTD Puskesmas Kartoharjo, 498 hypertensive patients were recorded in 2025. The health center also conducts a Prolanis hypertension class that provides health examinations, education, and regular Prolanis exercise. A preliminary study conducted in April 2026 found that, among 110 registered participants, a considerable number did not regularly participate in Prolanis exercise sessions, indicating that participation remained suboptimal

. Although previous studies have examined the effects of Prolanis exercise on blood pressure, most used pre-post or quasi-experimental designs and were conducted in different settings. For example, Inriani et al. (2021) examined the effect of Prolanis exercise on blood pressure using an intervention approach. Warjiman et al. (2021) also investigated the effect of Prolanis exercise on blood pressure among patients with hypertension. Meanwhile, Oktarina et al. (2023) examined participation in the Prolanis exercise program and its relationship with blood pressure using a cross-sectional approach. Evidence regarding the relationship between the level of participation in Prolanis exercise and blood pressure control among elderly hypertensive patients in the working area of Kartoharjo Community Health Center, Magetan, remains limited. Therefore, this study aimed to determine the relationship between the level of participation in Prolanis exercise and blood pressure control among elderly hypertensive patients in the working area of Kartoharjo Community Health Center, Magetan.

MATERIALS AND METHODS

This study employed an analytical observational design with a cross-sectional approach to examine the relationship between the level of participation in Prolanis exercise and blood pressure control among elderly hypertensive patients in the working area of Puskesmas Kartoharjo, Magetan Regency, East Java, Indonesia. This design allowed both variables to be assessed within the same observation period.

The study population consisted of 110 elderly hypertensive patients registered in the Prolanis hypertension (HT) class at UPTD Puskesmas Kartoharjo. The sample size was determined using the Slovin formula with a 10% margin of error, resulting in 53 respondents selected through simple random sampling. Respondents were included if they were aged ≥60 years, diagnosed with hypertension, registered as Prolanis participants, had at least six months of Prolanis exercise attendance records, had undergone regular antihypertensive therapy for at least six months, had blood pressure data during the study period, and provided informed consent. Respondents were excluded if their attendance or blood pressure data were incomplete or if they had severe cognitive or communication impairments that prevented independent participation.

The independent variable was the level of participation in Prolanis exercise, defined as the proportion of attendance during the preceding six months based on the exercise attendance register. Participants were categorized as active if attendance reached ≥75% (5–6 of 6 monthly sessions) and not active if attendance was <75% (BPJS Kesehatan, 2014). The dependent variable was blood pressure control, assessed based on systolic blood pressure at the end of the six-month observation period using a digital sphygmomanometer. Blood pressure was categorized as controlled (systolic ≤140 mmHg) or uncontrolled (systolic ≥140 mmHg) (WHO, 2025).

Data were processed through editing, coding, data entry, cleaning, and tabulation using IBM SPSS. Univariate analysis described the frequency distribution of participation level and blood pressure control,

while bivariate analysis used the Chi-square test with a 95% confidence level (α = 0.05). The strength of association was assessed using the Contingency Coefficient (CC). A p-value ≤0.05 indicated a statistically significant relationship.

RESULTS AND DISCUSSION

Table 1 Level of Participation in Prolanis Exercise

No	Level of Participation in Prolanis Exercise	f	Percentage (%)
1.	Not Active	12	22.6
2.	Active	41	77.4
	Total	**53**	**100**

Note: f = frequency

Table 1 shows that, among the 53 respondents, 41 (77.4%) were classified as active participants in Prolanis exercise, while 12 (22.6%) were classified as not active. These findings indicate that most elderly hypertensive patients registered in the Prolanis hypertension class at UPTD Puskesmas Kartoharjo actively participated in Prolanis exercise.

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Table 2 Blood Pressure Control

No	Blood Pressure Control	F	Percentage (%)
1.	Uncontrolled	15	28.3
2.	Controlled	38	71.7
	Total	**53**	**100**

Note: f = frequency

Table 2 shows that of the 53 respondents, 38 respondents (71.7%) had controlled blood pressure, while 15 respondents (28.3%) had uncontrolled blood pressure at the end of the six-month observation period. These results suggest that although the majority of respondents achieved blood pressure control, a substantial proportion of elderly hypertensive patients in this Prolanis group still had blood pressure that remained above the recommended target.

Table 3 Relationship between the Level of Participation in Prolanis Exercise and Blood Pressure Control

Level of Participation in Prolanis Exercise	Blood Pressure Control				p-value	CC
	Uncontrolled	%	Controlled	%		
Not Active	8	66.7	4	33.3	0.001	0.461
Active	7	17.1	34	82.9		
Total	12	100	41	100		

Table 3 shows that among the 15 respondents who were not active in Prolanis exercise, 8 respondents (66.7%) had uncontrolled blood pressure and 4 respondents (33.3%) had controlled blood pressure. In contrast, among the 38 respondents who were active in Prolanis exercise, 7 respondents (17.1%) had uncontrolled blood pressure while 34 respondents (82.9%) had controlled blood pressure. The Chi-square test yielded a p-value of 0.001, which is smaller than α = 0.05; therefore, H_0 was rejected and Ha was accepted, indicating a statistically significant relationship between the level of participation in Prolanis exercise and blood pressure control among elderly hypertensive patients in the working area of Puskesmas Kartoharjo. The Contingency Coefficient (CC) was 0.461, indicating a positive relationship of moderate

strength: the more actively respondents participated in Prolanis exercise, the greater the likelihood that their blood pressure was controlled

These findings are consistent with the physiological explanation that regular aerobic exercise, such as Prolanis exercise, promotes vasodilation through the release of nitric oxide, improves vascular elasticity and circulation, reduces peripheral vascular resistance, and lowers sympathetic nervous system activity, all of which contribute to lower and more stable blood pressure (de Barcelos et al., 2022; Rahmi et al., 2023).
The results also align with previous studies reporting a beneficial effect of Prolanis exercise on blood pressure. Aisah and Pratama (2025) found a significant decrease in both systolic and diastolic blood pressure following Prolanis exercise ($p < 0.05$), while Hasibuan et al. (2024) reported that participants who were more active in Prolanis exercise showed a significantly greater reduction in blood pressure than those who were less active ($p < 0.05$), suggesting that the effectiveness of Prolanis exercise depends not only on the type of activity performed but also on the frequency and consistency of participation. Similarly, Komalasari et al. (2023) emphasized that the effectiveness of hypertension exercise programs within Prolanis is optimal only when participants attend actively and continuously, while Kondoj et al. (2025) and Kusumaningrum and Nasrudin (2024) demonstrated that a higher level of activeness in Prolanis club activities is associated with better health-related outcomes among participants.

Although several respondents who were active in Prolanis exercise still had uncontrolled blood pressure, this suggests that exercise participation alone is not sufficient to guarantee blood pressure control, since hypertension is a multifactorial condition also influenced by other factors such as diet, body weight, stress levels, comorbidities, and pharmacological therapy that were not examined in this study. Nevertheless, the substantially higher proportion of uncontrolled blood pressure among respondents who were not active in Prolanis exercise compared with those who were active indicates that the level of participation in Prolanis exercise remains an important factor associated with blood pressure control among elderly hypertensive patients.

Based on these findings, strengthening participants' engagement in Prolanis exercise, for example through reminders, family support, and improved accessibility of exercise sessions, is expected to support better blood pressure control among elderly hypertensive patients. Melinda et al. (2022) reported that family support can contribute to better adherence to health-related activities among patients with chronic diseases. Rispawati et al. (2024) also emphasized the importance of supportive factors in maintaining participation in Prolanis activities. Therefore, strengthening participants' engagement in Prolanis exercise should be considered as part of hypertension management strategies at the primary healthcare level.

CONCLUSION

This study demonstrated a significant relationship between the level of participation in Prolanis exercise and blood pressure control among elderly hypertensive patients in the working area of Puskesmas Kartoharjo, Magetan Regency ($p = 0.001$; $CC = 0.461$). Elderly hypertensive patients who were active in Prolanis exercise were more likely to have controlled blood pressure than those who were not active, indicating that regular participation in this non-pharmacological intervention is an important behavioral factor associated with blood pressure control. These findings highlight the importance of strengthening participants' engagement in Prolanis exercise as part of hypertension control efforts at the primary healthcare level. Community health centers are encouraged to improve strategies that encourage regular attendance, such as reminders, family involvement, and convenient scheduling, in order to optimize the benefits of the Prolanis program for elderly hypertensive patients.

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