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Beyond self-management: Physical activity as the main predictor of quality of life in older adults with hypertension in indonesia

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Abstract

Background: Evidence shows family support, motivation, and physical activity are crucial for quality of life in elderly individuals with hypertension, with physical activity showing strong correlation. Factors like self-management, education, and income also play key roles. This study is situated in a Bandung City district where in 2021, primary hypertension was the leading cause of death and most prevalent disease. In 2023, of 437 residents with hypertension, only 35 elderly individuals regularly monitored their condition at the district's Community Health Center.

Purpose: To investigate how physical activity and self-management affect quality of elderly life with Hypertension at a Community Health Care facility in an urban district in Bandung.

Method: The study population included 72 elderly individuals, with a sample of 62 respondents determined by Slovin formula. Respondents were assessed using the SF36 questionnaire for quality of life, Physical Activities Scale for the Elderly (PASE), and Hypertension Self-Management Behavior Questionnaire (HSMBQ). Data analysis was conducted using multiple logistic regression.

Results: Findings showed 69.4% of respondents had satisfactory physical activity levels, 56.5% showed effective self-management, and 83.9% reported high quality of life. Physical activity had the strongest influence (OR= 4.980) (95% CI OR: 7.520 – 211.29), while self-management showed moderate impact (OR=1.811).

Conclusions: Elderly individuals with unsatisfactory physical activity face a 4,980-fold increased risk of declining quality of life compared to those with good activity levels. Those with unsatisfactory self-management face 1,811-fold increased risk of decreased quality of life versus those with effective practices.

Keywords: Elderly; Hypertension; Physical Activity; Quality of Life; Self-Management.

INTRODUCTION

Hypertension, commonly referred to as high blood pressure, is a condition well-known to the general populace. It is characterized by blood pressure readings of $\geq 140/90$ mmHg (Systolic ≥ 140 and Diastolic ≥ 90) in individuals aged 18 years and older, as per standard estimations (World Health Organization, 2024). Hypertension serves as a risk factor for various diseases, including cardiovascular diseases, with both incidence and severity escalating with age. The global prevalence of hypertension is underscored by the increase in affected individuals, rising from 650 million in 1990 to 1.3 billion in 2019. In Indonesia specifically, the same source reported that hypertension-related deaths in 2019 totaled 1.8 million. Furthermore, among Indonesia's population of 269.6 million, 51.3 million adults aged 30-79 have been identified as hypertensive, with only 4% achieving controlled hypertension and merely one-third having received a diagnosis (Widyawati, 2021; World Health Organization, 2024).

The Caringin Community Health Care facility is situated in the Babakan Ciparay Subdistrict of Bandung City, where primary hypertension emerged as the leading cause of mortality in 2021, ranking first among the 21 most prevalent diseases in the area (Bandung Municipal Health Office, 2024). The severity of the hypertension issue is further highlighted at the Community Health Centre. A preliminary study and documentation from the elderly clinic revealed that in 2023, there were 437 residents diagnosed with hypertension. Despite the substantial number of registered hypertension patients, data from the elderly clinic indicated that, on average, only 35 elderly individuals received regular health services each month.

Hypertension not only elevates the risk of mortality among the elderly but also detrimentally affects their quality of life. Variations in blood pressure and the onset of secondary diseases associated with hypertension significantly impair the elderly's capacity for self-management in daily activities. Evidence indicates that reducing blood pressure in older adults effectively prevents cardio and cerebrovascular diseases and decreases the incidence of hip fractures, which are known to diminish quality of life (Egan, Mattix-Kramer, Basile,

& Sutherland, 2024; Rakugi & Kawai, 2017). Consequently, initiatives to lower blood pressure in this demographic have been integrated into various health promotion activities aimed at seniors. Beyond medical interventions, several additional factors have been identified as influential in reducing blood pressure and enhancing the quality of life among the elderly.

Empirical research indicates that family support, motivation, and physical activity significantly influence the quality of life in elderly individuals with hypertension, with physical activity demonstrating the strongest correlation (Budhiana, Suheri, Ahmad, Dewi, & Fajriah, 2022; Prastika & Siyam, 2021). Beyond family support and physical activity, additional factors such as self-management, higher education, and income have also been identified as influential determinants of quality of life in the elderly. Furthermore, previous studies reported that among the elderly population, self-management and lifestyle improvements contribute positively to health and quality of life. Among these various factors, physical activity and self-management emerge as the predominant influences on the quality of life in the elderly (Du, Kong, Ran, Ran, Bai, Du, & Zhao, 2022; Mansouri, Khosravi Farsani, Mohammadifard, Nouri, Jozan, Tabatabaei, & Rafiee, 2024). However, it remains uncertain whether these factors are also the primary determinants of quality of life for elderly individuals. Therefore, it is imperative to conduct a more in-depth investigation to ascertain the main factors influencing the quality of life in this population.

The primary objective of this study was to examine the impact of physical activity and self-management on the quality of life among elderly individuals with hypertension visited the Community Health Care. This research underscores the significance of hypertension management in mitigating cardiovascular disease risk and enhancing quality of life of the elderlies. Furthermore, it posits that variables such as physical activity and self-management exert considerable influence on the quality of life among elderly individuals, even though a knowledge gap persists regarding the specific impact of these factors on elderly patients attending Community Health Centers in Indonesia.

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RESEARCH METHOD

This multivariate quantitative study investigates the quality of life among elderly individuals with hypertension (dependent variable) and its association with physical activity and self-management (independent variables). The study population comprised 72 elderly individuals attending the Caringin Community Health Elderly Clinic in Bandung, West Java, Indonesia, in September 2024, excluding those with comorbid conditions such as heart disease and diabetes. The sample size was determined to be 62 respondents using the Slovin formula. Respondents were evaluated using the Physical Activities Scale for Elderly (PASE) and Hypertension Self-Management Behavior (HSMBQ) questionnaires.

The variables measured in this study included hypertension category, physical activity, self-management, and quality of life among elderly individuals with hypertension. Hypertension category was determined based on blood pressure measurements obtained during examination at the elderly clinic. Respondents were classified as having normal-high blood pressure if their systolic blood pressure ranged from 130–139 mmHg and/or diastolic blood pressure ranged from 85–89 mmHg, while respondents with systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 100 mmHg were categorized as having stage 2 hypertension.

Physical activity was assessed using the Physical Activity Scale for the Elderly (PASE) questionnaire, which evaluates the frequency and intensity of physical activities performed by elderly individuals. The results were categorized into adequate physical activity if the total PASE score was equal to or above

the mean/median score of respondents, and inadequate physical activity if the total score was below the mean/median score.

Self-management was measured using the Hypertension Self-Management Behavior Questionnaire (HSMBQ), which assesses the ability of elderly individuals to manage hypertension independently, including medication adherence, dietary regulation, physical activity, blood pressure monitoring, and stress management. Respondents with total HSMBQ scores equal to or above the mean/median score were categorized as having effective self-management, whereas those with scores below the mean/median score were categorized as having fair self-management.

Quality of life was assessed using a quality-of-life questionnaire covering physical, psychological, and social well-being domains. Respondents with total scores equal to or above the mean/median score were categorized as having good quality of life, while respondents with scores below the mean/median score were categorized as having poor quality of life.

Data analysis was conducted using multiple logistic regression to assess the impact of physical activity and self-management on the quality of life in elderly individuals with hypertension. This study received ethical approval (Certificate No.035/KEPK/IKI/V/2024) from the Health Research Ethics Committee of Immanuel Institute of Health and was licensed in accordance with the Research Certificate of the National Unity and Political Agency Number PK.03.04.05/1649-BKBP/VII/2024 and the Bandung City Health Office Number B/KS.12.01/3512-Dinkes/VIII/2024.

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RESEARCH RESULTS

Table 1. Respondent Characteristics (N= 62)

Variable	Results	p-value
Age (Mean±SD)(Range)(Year)	(70.47±5.28) (60-79)	
Age (n/%)		
Pre Elderly (60-69 Year)	27/43.5	0.84
Elderly (70-79 Year)	35/56.5	
Gender (n/%)		
Female	51/82.3	0.39
Male	11/17.7	
Hypertension Category (n/%)		
Normal-High	4/6.5	0.03
Stage 2 hypertension	58/93.5	
Physical Activity (n/%)		
Adequate	43/69.4	0.25
Inadequate	19/30.6	
Self-Management (n/%)		
Effective	35/56.5	0.10
Fair	27/43.5	
Quality of Life (n/%)		
Good	52/83.9	
Poor	10/16.1	

Table 1 summarizes the respondent characteristics. The mean age was 70.47 years (SD $\pm$ 5.28), with the majority being female (82.3%, n = 51). Most respondents were classified as elderly (56.5%) and nearly all presented with Stage 2 hypertension (93.5%). Among this group, physical activity was predominantly adequate (69.4%). Furthermore, 56.5% of hypertensive elderly demonstrated effective self-management, and 83.9% reported a good quality of life. In the bivariate selection analysis variables were retained based on statistical significance ($p < 0.25$) in relation to the dependent variable, quality of life. The analysis identified physical activity, self-management, and hypertension category as candidates for inclusion in the subsequent multivariate model.

Table 2. Multivariate Modelling

Variable	p-value	Odd Ratio	Percentage (%)	
			95% CI for OR	
			Lower	Upper
Physical Activity	0.04	4.980	1.074	23.099
Hypertension Category	0.59	0.114	0.012	1.087
Self-management	0.438	1.811	0.404	8.125

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Based on the results presented in Table 2, a statistically significant relationship between physical activity and the quality of life among elderly individuals is evident, as indicated by a P value of 0.04 (< 0.05). The impact of physical activity on the quality of life of the elderly is demonstrated by an odds ratio (OR) of 4.980, suggesting that hypertensive elderly individuals with inadequate physical activity levels are 4.980 times more likely to experience a poor quality of life compared to those engaging in adequate physical activity. No confounding factors were identified in the analysis. Besides Physical Activity, Self-Management had middle impact, where older adults who did not do self-management up to a good standard will have the risk of their QOL decreasing 1.811 times more than the elderlies with good self-management.

DISCUSSION

Physical activity exerts an influence on the quality of life of elderly people with hypertension

The survey results from the PASE questionnaire in this study indicate that the majority of elderly individuals at the PHC frequently engage in light activities, albeit for short durations (less than 1 hour). A significant proportion of the elderly population continues to participate in light exercise, minor sports, and leisure activities such as shopping, leisurely walks, and family recreation. Although there is limited research specifically addressing light activities, enjoyable physical activities such as dance and aerobic movements have been demonstrated to enhance cognitive function, physical performance, and quality of life in the elderly population (Esmail, Vranceanu, Lussier, Predovan, Berryman, Houle, & Bherer, 2020; Glynn, Meinhardt, LaSorda, Graves, Gmelin, Gerger, & Boudreau, 2020; Islam, Islam, Hosen, Lambert, Maddison, Lambert, & Thompson, 2023; Lee & Heo, 2021; Leme, Guedes, Larkin, Han, Barra, Canziani, & Pecoits-Filho, 2020; Yang, Wu, Lin, Liao, Fan, Wu, & Wang, 2023). Nevertheless, research on moderate to vigorous intensity physical activity has demonstrated its potential to maintain telomere length (TL) in older adults, which serves as a molecular marker of aging. However, the optimal intensity and duration of physical activity necessitate

further elucidation (Schellnegger, Lin, Hammer, & Kamolz, 2022). The association between physical activity and quality of life may vary according to activity intensity and the age of elderly individuals.

In this study, most elderly individuals engage in light physical activities, but a few never participate in any physical activity, opting to sleep or watch television instead. This is concerning as sedentary behavior in the elderly is linked to higher mortality risk due to metabolic decline. Prolonged sitting is associated with metabolic syndrome, adverse triglyceride and blood glucose levels, increased waist circumference, and obesity. Additionally, sedentary behavior reduces aerobic weakens skeletal muscle function, and impairs cognitive function in the elderly (Taylor, Rix, Gibson, & Paxton, 2020; Esmail et al., 2020; Glynn et al., 2021; Jamshidpour, Bahrpeyma, & Khatami, 2020; Oliveira-Silva, Gonçalves, Venâncio, Tolentino, Lima, Júnior, & Pires-Oliveira, 2017; Wingood, Bonnell, LaCroix, Rosenberg, Walker, Bellettiere, & Gell, 2021).

Middle effect of self-management on the quality of life of elderly people with hypertension

The survey conducted at PHC reveals inadequate self-management practices among the elderly population, particularly in limiting sodium intake, portion control, and engaging in physical activity for weight reduction. Moreover, a small number of individuals did not demonstrate awareness of hypertension symptoms. Additionally, they exhibit reluctance to discuss blood pressure fluctuations with healthcare professionals, despite adhering to regular monitoring and hypertension medication regimens. A systematic review identified factors impeding older adults in developing countries from engaging in clinical communication, including access to appointments, health information support, and reliance on a single healthcare provider (Gaffney & Hamiduzzaman, 2022). Furthermore, the effectiveness of information delivery may be problematic; a study on the development of an educational model for patients and families with hypertension in South Sumatra stated that developing programs that are suitable for patients' needs will lead to the appropriate educational approach and programs that are complex and require support from health providers (Muliyadi, Putri, & Yuniati, 2024).

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Research on self-reported activities in the elderly population demonstrates that self-interventions, such as daily activity reporting by older adults, are often inaccurate. Elderly individuals frequently experience difficulties in recalling and reporting activities that deviate from their habitual routines (Martinez-Ibanez, Marco-Moreno, Peiro, Martinez-Ibanez, Barreira-Franch, Bellot-Pujalte, & Sanfelix-Genoves, 2023; Ribeiro, Oliveira, Goes, Gonçalves, Dias, & Fonseca, 2023; Stupplebeen, Pirkle, Sentell, Nett, Ilagan, Juan, & Keliikoa, 2020; Villar, Vásquez, Balcázar, López, Barrera, & Moreno, 2023). Consequently, self-reporting and self-management strategies are not optimal when implemented without complementary supportive interventions. Although this study did not reveal evidence of a correlation between self-care ability (self-management) and the quality of life of elderly individuals with hypertension, previous research has identified a positive association between self-care behaviours and improved quality of life in older adults. Activities such as oral hygiene care, developing skills in selecting nutritious foods, monitoring blood pressure, and the ability to self-administer medication have been shown to enhance the quality of life for elderly individuals. Furthermore, the capacity for self-care has been associated with improved self-confidence and self-image among older adults (Bakar, Sari, & Komariah, 2024; Ford, Crowther, Barron, & Kelley, 2020; Gucciardi, Jean-Pierre, Karam, & Sidani, 2016; Lawless, Tieu, Feo, & Kitson, 2021; Tursina, Nastiti, & Sya'id, 2022; Safitri, Aminah, Ristanto, Rizzal, & Laksono, 2024; Tao, Liu, Hua, Lv, & Ni, 2024; Yunger, Hbur, & Krylova, 2022; Zhang, Qiu, Zheng, Zang, & Zhao, 2020).

Conversely, the middle association between self-management and QoL may be attributed to the limitations of the instrument in capturing relevant behaviors. The HSMB questionnaire utilized in this study likely encompassed fundamental self-management practices such as sodium intake reduction, medication adherence, regular blood pressure monitoring, symptom awareness and recognition, and engagement with healthcare providers. However, it may not have included measurements for behavioral and emotional factors, such as stress management, self-efficacy, or motivation levels, which are critical in managing

chronic conditions like hypertension. In studies on chronic illnesses, patients who received a collaborative care intervention demonstrated improved self-care knowledge and efficacy, which was positively associated with better depression outcomes, emphasizing the complex interplay between stress management, self-efficacy, and motivation in chronic disease management (Alosaimi, Alshahrani, Aladhayani, Alwethenani, Alsahil, & Fadhlul, 2020; Basile, Smith, Chen, & Zwald, 2021; Fernández, Vicente, Guilabert, Carrillo, & Mira, 2023; Francis, Harhay, Ong, Tummalapalli, Ortiz, Fogo, & Fliser, 2024; Hladek, Gill, Bandeen-Roche, Walston, Allen, Hinkle, & Szanton, 2020; Hudon, Fortin, Haggerty, Loinjon, Lambert, & Poitras, 2012; Hudson, Darking, & Cox, 2020; Jacob & McCafferty, 2023; Nixon, Bampouras, Gooch, Young, Finlayson, Pendleton, & Dhaygude, 2021; Pujolar-Díaz, Miró Catalina, Fuster-Casanovas, Sola Reguant, & Vidal-Alaball, 2024; Surikova, Payne, Miller, Ravaei, & Nolan, 2020; Wu, Dong, Tan, Gan, Zhang, Chi, & Tan, 2022). Tailoring interventions to address these factors, while considering individual differences in personality and beliefs, may lead to more effective self-management programs for conditions such as hypertension.

CONCLUSIONS

This study concludes that Physical Activity, Self-Management, and Quality of Life among elderly individuals with hypertension in PHC are predominantly favorable. A statistically significant association between physical activity and quality of life in the elderly population was observed, wherein elderly individuals with poor physical activity exhibited a 4.980-fold increased risk of experiencing a diminished quality of life. However, no significant relationship or influence was identified between self-management and the quality of life of elderly individuals with hypertension.

RECOMMENDATION

To improve elderly quality of life, healthcare providers should implement patient-centered interventions that integrate physical activity into routine care, including tailored exercise prescriptions, group activities, monitoring, and

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follow-ups. Primary healthcare centers are urged to establish community-based programs, such as senior exercise groups, and embed physical activity counselling into initiatives like the Health Elderly Program. Policymakers can strengthen national campaigns, expand movements like Healthy Living to emphasize culturally appropriate exercises, provide age-friendly facilities, and integrate activity promotion into healthcare systems. Collaboration with local governments, NGOs, and fitness centers can further ensure affordable, inclusive programs for older adults.

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