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Instrumental Activities of Daily Living and Quality of Life Among Older Adults with Hypertension: A Cross-Sectional Study in Grogol, Indonesia

Syifa Aulia[1], Agus Sudaryanto[2]

[1]Nursing Study Program, Faculty of Health Sciences, Muhammadiyah University Surakarta, Surakarta, Indonesia
[2]Department of Community and Family Nursing, Nursing Study Program, Faculty of Health Sciences, Muhammadiyah University Surakarta, Surakarta, Indonesia

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Corresponding author

Agus Sudaryanto*
Muhammadiyah University Surakarta
Jl. A. Yani, Mendungan, Pabelan, Kec. Kartasura, Kabupaten Sukoharjo, Jawa Tengah, Indonesia
email: agus_sudaryanto@ums.ac.id

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Abstract

Background: Global population aging is accelerating, including in Indonesia, and is accompanied by an increasing burden of chronic conditions such as hypertension. Older adults with hypertension are vulnerable to functional decline, particularly in instrumental activities of daily living (IADL), which may adversely affect their quality of life (QoL). However, empirical evidence examining the relationship between IADL and QoL in primary healthcare settings remains limited.
Objective: This study aimed to examine the association between instrumental activities of daily living and quality of life among older adults with hypertension attending a primary health center.
Methods: A cross-sectional study was conducted involving 382 older adults with hypertension registered at the Grogol Health Center. IADL was assessed using the Lawton Instrumental Activities of Daily Living scale, while QoL was measured using the Kualitas Kehidupan Lansia (KKHL) questionnaire. Descriptive statistics were presented as medians and interquartile ranges (IQRs) due to non-normal data distribution. The association between IADL and QoL was analyzed using Spearman's rank correlation test.
Results: The median QoL score was 56 (IQR: 50–58), indicating relatively homogeneous quality of life among participants. Most respondents demonstrated functional independence in IADL. A statistically significant but weak positive correlation was found between IADL and QoL ($\rho = 0.131$; $p = 0.010$; 95% CI: 0.03–0.23).
Conclusion: Functional independence in IADL was positively associated with QoL among older adults with hypertension, although the strength of the relationship was weak. Other contributing factors should be explored to better understand determinants of QoL in this population.

Keywords: instrumental activities of daily living; quality of life; older adults; hypertension; primary health care

INTRODUCTION

Aging is a natural process experienced by every individual, marked by the gradual increase in age that eventually reaches the last stage of the human life cycle. In 2020, the global population aged 65 years reached 727 million, and projections estimate that this figure will increase to 1.5 billion by 2050. Over the last five decades, Indonesia's share of elderly persons has steadily increased. In 1971, the elderly population was 4.5%, rising to 10.7% in 2020, and is projected to

reach 19.9% by 2045 (1). Older people have specific characteristics, such as having goals and issues that range from biopsychosocial to spiritual, healthy to ill, and adaptive to maladaptive (2). So that they will experience physiological, functional, cognitive, and psychosocial changes. These age-related changes may lead to health problems, including declines in physical functions such as hearing, vision, and bone density; alterations in connective tissue around the joints; and reduced elasticity of the heart muscle (3).

Hypertension itself is a public health issue that often presents without noticeable symptoms. Every year, the number of persons with hypertension increases, and by 2025, it is expected to reach 1.5 billion (4). The incidence of hypertension in older people worldwide is expected to increase by 1.4 billion by 2024 (5). In 2018, the incidence of hypertension in Indonesia varied by age group: 55.2% among individuals aged 55–64 years, 63.2% in those aged 65–74 years, and 69.5% in individuals aged over 75 years (6). These findings indicate that individuals in the very elderly group have the highest risk of hypertension. In addition, older adults have several complex health conditions that are commonly referred to as geriatric syndromes. This is often a consequence of various underlying factors and includes physical weakness (7). So, hypertension can be a risk factor for physical weakness that will affect daily activities.

Physical activity is generally defined as bodily movement that requires energy expenditure, such as completing household tasks (8). Age plays a significant role in shaping a person's ability to perform daily activities. As people grow older, they may increasingly require assistance in carrying out routine tasks due to physiological changes associated with aging. The aging process experienced by the elderly can cause several health problems due to physical weakness (9). When an individual experiences a decline in physical function due to aging, this limitation disrupts their capacity to perform out regular tasks and instrumental activities of daily living (IADL). IADL is a more complex activity in detecting functional disorders (10). The elderly are often considered weak, dependent on others, and a burden to society.

When the elderly are no longer able to carry out daily activities independently, they will be dependent on others to meet their daily needs. The greater a person's dependence on others for daily activities, the lower their quality of life tends to be. When hypertension remains unmanaged, the risk of complications rises, and quality of life declines (11). Poor quality of life (QoL) in the elderly often arises from physical limitations and difficulties in performing daily activities. Additionally, social factors—such as the loss of a close family member—may also reduce the QoL of older people. QoL reflects a person's level of life satisfaction, including the ability to perform physical activities, financial stability, safety, and environmental conditions (12). Poor QoL in older individuals may prevent them from experiencing a meaningful, joyful, and fulfilling old age, ultimately affecting their overall well-being. (13). Poor physical condition and decreased performance in meaningful activities are able to maintain a positive self-identity so as to maintain a good quality of life (14)

Based on the background obtained, although various studies have assessed the quality of life in the elderly, the evidence on the relationship between IADL and QoL in the elderly with hypertension is still very limited, especially in the population that receives primary health services such as health centers. Therefore, the purpose of this study is to examine how IADL affects QoL in elderly people with hypertension at Grogol Health Center.

METHODS

Study Design

This study employed a descriptive correlational design with a cross-sectional quantitative approach to examine the relationship between instrumental activities of daily living (IADL) and quality of life (QoL) among older adults with hypertension at the Grogol Health Center, Indonesia.

Population and Sample

A total of 382 older adults participated in this study. Nonprobability sampling with an accidental sampling technique was used, whereby individuals who met the inclusion criteria and were available during the data collection period were recruited. Participants were aged 60 years or older, diagnosed with hypertension, free from severe complications, had no recent injuries, and were not undergoing treatments that could affect their health condition. This sampling approach was selected due to limitations in human resources and funding, as well as ethical considerations related

to participant readiness, comfort, and feasibility in the primary healthcare setting.

Instruments

Instrumental activities of daily living were assessed using the Lawton IADL questionnaire, which consists of eight items evaluating functional abilities such as using a telephone, shopping, preparing meals, housekeeping, laundry, transportation, medication management, and financial management. For female respondents, scores of 0–2 indicated total dependence, 3–5 indicated slight dependence, and 6–8 indicated independence. For male respondents, the items related to meal preparation, housekeeping, and laundry were excluded to avoid gender bias, resulting in score categories of 0–1 for total dependence, 2–3 for slight dependence, and 4–5 for independence.

Validity testing of the Lawton questionnaire was conducted with 30 older adults at Kartasura Health Center using Pearson's Product–Moment correlation with an r-table value of 0.361 at a 5% significance level. All eight items were found to be valid, as the calculated r-values exceeded the r-table value. Reliability testing produced a Cronbach's alpha of 0.779, indicating acceptable internal consistency.

Quality of life was measured using the Kuesioner Kualitas Hidup Lansia (KKHL), a 15-item instrument developed by the researchers to assess satisfaction with physical health, psychological well-being, social function, daily activities, environmental conditions, and access to health services and transportation. Content validity was evaluated by three experts in gerontic and community nursing, with all items receiving an Item-Level Content Validity Index (I-CVI) of 1.00 and a Scale-Level CVI/Average (S-CVI/Ave) of 1.00, indicating excellent content validity.

Each item in the KKHL was rated on a five-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied), with total scores ranging from 15 to 75. Higher scores indicated better quality of life. Because no national normative values are available for the Indonesian elderly population, the median score of 56 was used as the cut-off point, with scores of 56 or higher categorized as good quality of life and scores below 56 categorized as poor quality of life. Validity and reliability testing conducted with 30 older adults showed that all items were valid, with r-values exceeding 0.361, and the instrument demonstrated acceptable reliability with a Cronbach's alpha of 0.762. The KKHL was selected to ensure clarity for older adults with varying literacy levels and to minimize respondent fatigue compared with longer international instruments such as the WHOQOL-BREF.

Data Collection Procedure

Data were collected over a one-month period using an accidental sampling technique. Eligible respondents who agreed to participate completed the questionnaires after providing informed consent. Blood pressure was measured on the non-dominant arm with participants seated upright, feet flat on the floor, and arms supported at heart level after a minimum five-minute rest. Blood pressure classification followed the 2017 American Heart Association guidelines.

Data Analysis

Univariate analysis was used to describe the frequency and proportion of the study variables. Bivariate analysis was conducted using Spearman's rank correlation to examine the relationship between IADL and QoL. Statistical significance was set at a p-value of less than 0.05 with a 95% confidence level. All analyses were performed using SPSS version 25.

Ethical Considerations

Ethical approval was obtained from the relevant authorities. All participants received a full explanation of the study objectives and provided written informed consent. Confidentiality and anonymity of personal data were strictly maintained throughout the study.

RESULTS

Table 1 presents the descriptive statistics of instrumental activities of daily living (IADL) scores by gender. Women demonstrated higher functional independence than men, with a higher mean IADL score (mean ± SD: 6.98 ± 1.72 vs. 4.39 ± 1.17). The median (IQR) also indicated greater independence among women [8 (7–8)] compared to men [5 (4–5)]. Although the minimum–maximum score range was similar in both groups (2–8), the 95% confidence intervals showed a consistent difference in mean scores between genders.

Table 1. Data Analysis of IADL (n=382)

Gender	Mean	SD	Min-Max	95% CI	Median (IQR)
Woman	6.98	1.72	2-8	6.80-7.17	8 (7-8)
Man	4.39	1.17	2-8	4.05-4.72	5 (4-5)

Table 2. Data Analysis of Quality of Life (n=382)

	Mean	SD	95% CI	Min-Max	Median (IQR)
Quality of Life	54.38	3.931	53.99-54.77	46 - 62	56(50-58)

Table 3. Relationship Between IADL and QoL in the Elderly

Analysis	*p-value*	r	95% CI
IADL vs QoL	.010	.131	0.03 – 0.23

Table 3. Multiple linear regression

Predictor	B	SE(B)	β	t	p-value	95% CI	R^2
Constant	43.234	4.150		10.419	.001	35.074 – 51.393	
IADL	.647	.117	.308	5.530	.001	.417 - .877	
BP	.213	.394	.027	.541	.589	-.562 - .989	
Marital Status	-.452	.590	-.039	-.765	.445	-1.612 - .709	.093
Gender	.284	1.020	.024	.278	.781	-1.723 – 2.290	
Employment	1.030	.573	.150	1.798	.073	-.096 – 2.156	
Age	.083	.059	.071	1.403	.161	-.033 - .199	

Table 2 summarizes the distribution of quality of life (QoL) scores among respondents. The median QoL score was 56 (IQR: 50–58), indicating generally moderate to good quality of life. The observed scores ranged from 46 to 62, with a mean of 54.38 ± 3.93 and a 95% confidence interval of 53.99–54.77.

Correlation analysis (Table 3) showed a statistically significant but weak positive association between IADL and QoL (Spearman's r = 0.131, p = 0.010; 95% CI: 0.03–0.23). This indicates that greater functional independence was associated with slightly better perceived quality of life among older adults, although the magnitude of the relationship was small.

Multiple linear regression was conducted to identify factors associated with quality of life (Table 4). The model explained 9.3% of the variance in QoL (R^2 = 0.093). Among all predictors, only IADL showed a statistically significant association with QoL (B = 0.647; β = 0.308; t = 5.530; p = 0.001; 95% CI: 0.417–0.877). This suggests that higher IADL scores were independently associated with better quality of life. Other variables, including blood pressure, marital status, gender, employment status, and age were not significantly associated with QoL (p > 0.05).

DISCUSSION

The study findings indicate that most respondents demonstrated independence in IADL, with 352 individuals (92.1%) classified as independent and 30 respondents (7.9%) showing slight dependence. This level of independence suggests that, from a physical perspective, the elderly participants were still capable of performing more complex daily activities. Gender is a factor that affects IADL in older people. Men have limitations in doing some IADL items and various other household activities compared to women, such as washing clothes, cooking, and cleaning the house (15). The ability of respondents to perform physical activities independently may relate to their age distribution, as nearly half of the participants were aged 60–65 years (49.8%). Age influences IADL performance, and age-related declines in organ function, particularly in the nervous and musculoskeletal systems, can limit the capacity of older adults to carry out daily activities (16).

As age increases, a person will experience difficulties in performing daily activities both at home and outside, such as unsafe home conditions for the elderly, which increases the elderly's fear of falling, and heavy traffic. This may make it difficult for older people to engage in

activities that might worsen their physical health and raise their risk of becoming dependent on IADL. Therefore, pain also becomes a factor that hinders the elderly's activities (17). A person with a low economic status will find it more difficult to obtain medical care, thus increasing IADL inability (18). The diseases experienced, such as hypertension, can increase IADL inability more than the elderly who are older without diseases like hypertension (19). Furthermore, gender can also affect the activities of older people (20). When a person enters advanced age, changes and a decline in organ function will occur, resulting in a further decrease in the ability to perform activities (21). Physical independence represents a crucial component of healthy life expectancy in older adults and plays an essential role in achieving successful aging (22).

All respondents in this study demonstrated a good quality of life, which may be associated with their relatively younger elderly age group, as most participants were aged 60–65 years (49.8%). Physical activity is affected by age, and activity has been linked to QoL (23). The majority of respondents were female, accounting for 333 individuals (87.2%). This shows that gender can affect a person's quality of life (24).

QOL can serve as an indicator of the health and welfare of the elderly. Gender, marital status, educational status, and poor health status are associated with a poor quality of life (25). Cognitive impairment and factor depression rates (26), sleep quality that is too short or too long (27).

The analysis showed a statistically significant positive relationship between the independence of instrumental activities of daily life and the quality of life of the elderly, although the strength of the correlation obtained was relatively weak. These findings indicate that increased functional independence tends to be followed by a better quality of life, but its contribution is relatively limited because quality of life is a construct influenced by various other dimensions, including psychological conditions, social support, and the living environment. In addition, the relatively homogeneous distribution of quality of life scores, reflected by a median value of 56 with a narrow interquartile range (50–58), has the potential to limit data variability, thereby reducing the amount of correlation coefficients observed. The findings align with previous studies reporting a significant relationship between independence in fulfilling IADL and QoL among older people (28). Independence in IADL also relates to physical activity levels, as evidence indicates that physical function significantly influences the ability of older adults to meet their daily needs (29). Quality of life remains a critical health outcome in later life and depends substantially on the capacity to perform daily activities, which supports independence and overall well-being (30).

Thus, these results need to be interpreted carefully and affirm that efforts to improve the quality of life of the elderly, particularly at the primary health service level, cannot only focus on the aspect of functional independence, but also require a comprehensive approach that includes psychosocial and environmental interventions.

Study Limitations

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design does not allow causal inference; therefore, the observed association between IADL independence and quality of life cannot establish a cause–effect relationship. Second, the study sample was drawn from a single primary health center, which may limit the generalizability of the results to other elderly populations with different sociodemographic or healthcare characteristics. Third, most participants were relatively young older adults (60–65 years) and functionally independent, resulting in limited variability in IADL and QoL scores that may have weakened the observed correlation. Fourth, quality of life and IADL were assessed using self-reported instruments, which may be influenced by recall bias or social desirability. Finally, important confounding factors such as cognitive status, depression, social support, comorbidities, and environmental conditions were not comprehensively measured, although these factors are known to influence both functional independence and quality of life. Future studies using longitudinal designs, broader samples, and multidimensional assessments are recommended to strengthen the evidence base.

CONCLUSION

This study shows that there is a statistically significant positive association between the independence of instrumental activities of daily life and quality of life in the elderly, although the strength of the relationship obtained is relatively weak. These findings indicate that functional

independence plays a role as one of the factors related to quality of life, but is not a major determinant. The relatively homogeneous distribution of quality of life scores, as reflected by the narrow median and interquartile ranges, likely limited data variation and contributed to the low observed correlation coefficients. Therefore, the results of this study need to be understood as evidence of a relationship, not as evidence of causal impact. Further research is recommended to use longitudinal designs, involving samples with more diverse characteristics, and applying quality of life instruments that are more sensitive to variations in elderly conditions, in order to strengthen the understanding of the dynamics of the relationship between functional independence and QoL.

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Conflict of Interest
The author states that they have no conflict of interest with any party related to this research or this publication.

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Author Contributions
SA contributed to the study conceptualization, data collection, data analysis, and manuscript drafting.
AS contributed to study supervision, methodology development, interpretation of results, critical manuscript revision, and final approval of the submitted version.

Data Availability Statement
The data that support the findings of this study are available from the corresponding author upon reasonable request. Due to ethical considerations and participant confidentiality, the data are not publicly available.

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