



Familial Support and Physical Activity Levels among Hypertensive Patients at Primary Healthcare in Indonesia: A Cross-Sectional Study

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Abstract

Hypertension remains a significant non-communicable disease in Indonesia, contributing to high morbidity and mortality rates. Regular physical activity is a cornerstone of hypertension management, however patient engagement is often influenced by external factors, most notably the role of family support. This study aims to investigate the relationship between familial support and physical activity levels among hypertensive patients in a primary healthcare setting. A quantitative study with a cross-sectional design was conducted at the Kassi-Kassi Public Health Center. A total of 113 hypertensive patients were selected using a purposive sampling technique. Data were collected via structured questionnaires measuring family support and physical activity levels. Statistical analysis was performed using the gamma test with a significance threshold of $p < 0.05$. The findings indicate that patients who received high levels of family support were more likely to engage in better physical activity. Statistical analysis revealed a significant association between familial support and physical activity levels ($p = 0.001$). The Gamma coefficient of 0.806 indicates a strong and statistically significant positive correlation. Familial support is strongly associated with increased physical activity among hypertensive individuals. These results suggest that family-based interventions should be integrated into promotive and preventive programs within primary healthcare facilities to enhance hypertension management.

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1. INTRODUCTION

Hypertension is a global health priority, clinically defined as a systolic blood pressure >140 mmHg or a diastolic blood pressure >90 mmHg (O'Connell, Whelton, & Mills, 2026). Affecting approximately 1.28 billion adults aged 30–79 worldwide, it remains a primary driver of premature mortality. Despite global efforts, nearly 46% of hypertensive individuals are unaware of their condition, and only one in five successfully achieve blood pressure control (World Health Organization, 2023). In Indonesia, national surveys indicate a high prevalence of 30.8% as of 2023, with South Sulawesi reporting even higher rates at 31.68% (Kementerian Kesehatan Republik Indonesia, 2023). At the local level, data from the Kassi-Kassi Public Health Center shows that hypertension consistently ranks as the leading morbidity, with patient numbers increasing significantly toward the end of 2023.

Regular physical activity is a cornerstone of non-pharmacological hypertension management. Consistent exercise can reduce systolic blood pressure by 10 mmHg and diastolic pressure by 7.5 mmHg, significantly lowering the risk of atherosclerosis, cardiovascular disease, stroke, and chronic kidney disease (Barone Gibbs et al., 2021). However, poor physical activity engagement remains a critical issue among hypertensive populations. Many patients, particularly the elderly, exhibit sedentary lifestyles due to physical decline, fear of falling, or a perceived lack of relevance to their health status. Low physical activity leads to poor caloric burn and fat accumulation, which narrows blood vessels and further exacerbates hypertensive conditions.

Preliminary observations at the Kassi-Kassi Public Health Center highlight this alarming trend. Interviews with patients revealed that most suffer from symptoms such as dizziness and fatigue, which hinder their daily movement. Alarming, 60% of these patients reported fluctuating blood pressure and admitted to rarely participating in routine exercises like brisk walking, swimming, or gymnastics. Patients specifically noted a lack of encouragement and reminders from their family members to maintain an active lifestyle. While pharmacological treatments are standard, the success of lifestyle modifications such as increasing physical activity is deeply influenced by the patient's social environment. Familial support, encompassing emotional, informational, and instrumental assistance, is hypothesized to be a key predictor of health-seeking behavior. Families serve as the primary support system that can motivate patients to overcome perceived barriers to exercise (Karloh et al., 2023).

Based on research findings show that quantifiable link between external social support networks and the clinical outcomes of hypertension management. According to a systematic synthesis by Konlan & Shin (2023), home-based self-care and blood pressure control are multi-sectoral processes heavily influenced by familial social support, which directly enhances patient compliance with lifestyle modifications such as low-salt diets and normal weight management. This external reinforcement is crucial, as lower pill burdens and robust domestic support systems significantly mitigate the risks of uncontrolled hypertension. Furthermore, as investigated by Ma et al. (2024), structural equation modeling reveals that social support (including family and friends) carries multiple mediating effects on physical literacy ($r=0.557$, $p<0.01$) by significantly boosting a patient's internal psychological resources, specifically their sense of coherence and self-efficacy. These psychological mechanisms expand the patient's intrinsic motivation, allowing close social frameworks to successfully drive long-term active lifestyle habits and substantially enhance health-related quality of life among hypertensive populations (Bahri, 2025; Cao et al., 2026).

This study addresses a critical gap by specifically evaluating the predictive power of familial support on physical activity levels within an Indonesian primary healthcare setting. By shifting the focus from purely clinical or individual factors to a family-centered approach,

this research aims to provide evidence-based insights for developing more effective promotive and preventive interventions in the community.

To understand how family support shapes a patient's habits, we can look at it through the lens of Social Support and Social Cognitive theories. Managing a chronic illness like hypertension is emotionally draining. However, a supportive family triggers a 'stress-buffering mechanism' that eases this mental burden. When family members step in with verbal encouragement and practical help, it boosts the patient's self-efficacy their confidence to stay active. This confidence ultimately drives a genuine sense of self-care, making it easier for patients to maintain a physically active lifestyle.

While the general link between family and health is well-known, most studies treat family support as one big, generic concept. This is where our study brings something new to the table. We break family support down into four distinct dimensions: emotional, instrumental, informational, and appraisal support. By exploring how these four specific areas connect with physical activity levels within the Indonesian primary healthcare system, this study fills a critical gap. It provides a clearer, more practical blueprint for creating family-centered health programs in public health and chronic disease management.

2. METHODS

This study employed a cross-sectional quantitative correlational design and was conducted at Kassi-Kassi Public Health Center in Makassar, Indonesia. The study population consisted of 517 patients diagnosed with hypertension. A total of 113 participants were recruited using consecutive sampling, in which eligible patients were enrolled sequentially as they attended routine check-ups until the required sample size was reached. Participants were eligible if they had a formal diagnosis of hypertension, lived in a nuclear family, and had no mobility-limiting comorbidities, such as stroke or renal failure. These criteria were applied to ensure that physical activity levels primarily reflected psychosocial and familial influences rather than limitations caused by physical disability.

The sample size was determined using a correlational analytic formula with a 5% significance level ($\alpha = 0.05$) and 90% statistical power ($\beta = 0.10$), resulting in a required sample of 113 participants. Participants who met the inclusion criteria and attended the health center for routine follow-up were recruited consecutively until the target sample size was achieved. This recruitment procedure was intended to minimize selection based on researcher preference and ensure that all eligible patients presenting during the study period had an opportunity to participate.

Physical activity was assessed using the Indonesian version of the International Physical Activity Questionnaire (IPAQ), which has been validated for use in Indonesian populations. The criterion validity of the Indonesian version was previously established through a cross-sectional comparison with objective pedometer measurements, demonstrating a significant moderate correlation ($r = 0.477$) for total MET-minutes/week. In the present study, the instrument demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.80. The seven-item short form assesses walking, moderate-intensity, and vigorous-intensity physical activities performed during the previous seven days. The reported activities were converted into MET-minutes/week and categorized into low, moderate, and high physical activity levels according to the official IPAQ scoring protocol.

Familial support was assessed using a questionnaire adopted from an instrument developed and validated. The instrument demonstrated satisfactory validity, with all items showing corrected item-total correlation coefficients exceeding the critical r-table value of 0.301. Its internal consistency was also considered acceptable, with a Cronbach's alpha

coefficient of 0.68. The questionnaire was used to assess the level of familial support received by hypertensive patients in their daily lives.

Data analysis was conducted in two stages. Univariate analysis was used to describe the characteristics of the participants and the distribution of the study variables. Frequencies and percentages were calculated for demographic characteristics, including age, gender, educational level, occupation, and duration of hypertension. Familial support and physical activity were also categorized and presented using frequency distributions to provide a descriptive overview of the study population. Bivariate analysis was subsequently performed to assess the relationship between familial support as the independent variable and physical activity as the dependent variable. Because both variables were measured on an ordinal scale, the Gamma correlation test was used as a non-parametric measure of association. The strength and direction of the relationship were evaluated using a significance level of $p < 0.05$. A p-value below 0.05 was considered statistically significant, leading to rejection of the null hypothesis and indicating a significant association between familial support and physical activity among hypertensive patients. Ethical clearance was obtained from the Research Ethics Committee of the Faculty of Medicine and Health Sciences under ethical clearance number No. C.102/KEPK/FKIK/I/2025.

3. RESULTS AND DISCUSSION

Table 1. Frequency distribution of respondent characteristics (n=113).

Characteristics	Frequency (n)	Percentage (%)
Age Group (Years)		
40–50	36	31.9
51–60	54	47.8
61–65	23	20.3
Gender		
Female	81	71.7
Male	32	28.3
Educational Attainment		
Primary School	6	5.3
Junior High School	42	37.2
Senior High School	47	41.6
Higher Education	18	15.9
Occupational Status		
Unemployed/Retired	50	44.2
Entrepreneur	35	31
Private Employee	11	9.7
Civil Servant	17	15
Duration of Hypertension Diagnosis		
< 1 Year	7	6.2
1–2 Years	21	18.6
2–5 Years	24	21.2
> 5 Years	61	54
Total	113	100

Age and Biological Vulnerability. The study found that the majority of respondents were aged 51–60 years (47.8%), falling into the late adulthood category. This finding aligns with Acheampong (2019), who noted that individuals over 45 are twice as likely to develop

hypertension due to physiological changes, such as arterial wall thickening and decreased elasticity. Scientifically, this aging process reduces physical resilience and increases the risk of chronic cardiovascular complications (Badan Penelitian dan Pengembangan, Kementerian Kesehatan Republik Indonesia, 2019; World Health Organization, 2021).

Gender Predominance and Hormonal Influences. Females constituted 71.7% of the respondents, with a higher hypertension prevalence among women (Badan Penelitian dan Pengembangan, Kementerian Kesehatan Republik Indonesia, 2019). This trend is largely attributed to post-menopausal hormonal shifts, the decline in estrogen production negatively impacts vascular elasticity, increasing blood pressure. Socioculturally, women often exhibit higher health-seeking behavior and attendance at primary healthcare centers compared to men, who tend to be less proactive regarding chronic disease management.

Educational Attainment and Health Literacy. Most respondents (41.6%) had a senior high school education. Theoretically, higher education levels correlate with better health literacy and lifestyle choices (Susanti, Pisamturakit, & Sanchavanakit, 2023; Susanti et al., 2026). However, the researcher noted that despite having moderate-to-high educational backgrounds, many respondents still struggled with lifestyle-related hypertension, suggesting that knowledge of risk factors does not always translate into consistent healthy behaviors, such as routine physical activity.

Occupational Status and Sedentary Lifestyle. A significant portion of the sample was unemployed or retired (44.2%). Occupational status is a critical social determinant of health, unemployed individuals often engage in sedentary lifestyles, which exacerbate hypertensive conditions. While homemakers engage in light to moderate domestic tasks, retirees frequently experience a sharp decline in physical movement, leading to psychosocial stress and social isolation, both of which are risk factors for non-communicable diseases (World Health Organization, 2021).

Duration of Hypertension and Adaptation. More than half of the participants (54%) had been diagnosed with hypertension for over five years. Long-term illness can lead to two outcomes: increased health awareness and adaptation to healthy or "treatment fatigue," where patients become weary of chronic management. The researcher concludes that while long-term patients possess a better understanding of their condition, they require continuous familial supervision to prevent burnout and ensure sustained adherence to physical activity protocols.

Table 2. Frequency distribution of familial support and physical activity level among hypertensive patients (n=113).

Variables	Frequency (n)	Percentage (%)
Familial Support Category		
Poor	16	14.2
Fair	79	69.9
Good	18	15.9
Total	113	100.0
Physical Activity Level		
Low (Light)	27	23.9
Moderate	67	59.3
High (Vigorous)	19	16.8
Total	113	100.0

Table 2 found that 69.9% of hypertensive patients perceived their familial support as "fair," while only 15.9% reported "good" support. Emotional and instrumental dimensions were the most prominent forms of support identified, characterized by affection,

compassionate care, and the provision of a comfortable home environment. Theoretically, the primary function of a family is to maintain a supportive atmosphere that enhances the health status of its members by providing psychological stability (Friedman & Bowden, 2010; Salamung et al., 2021).

Furthermore, familial involvement in monitoring medication adherence and providing blood-pressure-friendly nutrition is crucial for preventing long-term complications. As individuals age, cognitive decline and memory impairment often lead to reduced treatment adherence. In this context, the family acts as a vital external regulator. Patients receiving robust emotional and instrumental support tend to be more motivated to sustain healthy lifestyles and maintain a better quality of life (Nursalam, 2019). The findings suggest that a family's deep understanding of the patient's condition serves as a significant catalyst for patient compliance during the management process.

Regarding physical activity, the majority of respondents (59.3%) were categorized as having "moderate" activity levels, primarily engaging in domestic tasks or light leisure activities. A lack of vigorous physical activity remains a significant risk factor for hypertension. Insufficient movement leads to a higher resting heart rate, forcing the cardiac muscles to work harder with each contraction, which subsequently increases peripheral arterial resistance and blood pressure (Manuntung, 2018; Platini, Maulana, & Hastuti, 2024).

Consistent aerobic exercise, such as walking, jogging, or cycling, is essential to maintain cardiorespiratory fitness and vascular elasticity (Shaw et al., 2025). The researcher observes that a sedentary lifestyle obstructs optimal oxygen and blood flow, directly exacerbating hypertensive symptoms.

Table 3. Gamma correlation analysis between familial support and physical activity levels (n=113).

Familial Support	Physical Activity Levels			Total	Gamma (r)	p-Value
	Low (n)	Moderate (n)	High (n)			
Poor	10	5	1	16	0.806	0.001
Fair	16	56	7	79		
Good	1	5	12	18		
Total	16	35	62	113		

The bivariate analysis demonstrated a significant relationship between familial support and physical activity among hypertensive patients in the service area of Kassi-Kassi Public Health Center. The Gamma correlation test showed a statistically significant positive association, indicating that higher levels of familial support were associated with greater engagement in physical activity. The strength of this relationship suggests that the family plays an important role in shaping health-related behaviors among individuals living with hypertension. Family members may influence patients' willingness to remain physically active through continuous encouragement, assistance, reminders, and reinforcement of healthy behaviors.

The relationship between familial support and physical activity can also be understood through psychological mechanisms. When family members actively provide encouragement, they may contribute to a stress-buffering mechanism that helps individuals cope with the psychological burden associated with chronic disease (Uchino, 2009). Living with hypertension may generate concerns about cardiovascular complications, emotional exhaustion, and reduced confidence in maintaining a healthy lifestyle. In this context, a supportive family environment can help stabilize emotional conditions, reduce perceived stress, and strengthen self-efficacy. As psychological

barriers are reduced, patients may become more motivated to engage in physical activity as part of their self-care and long-term hypertension management.

Familial encouragement may be particularly effective when combined with tangible and practical forms of support. Accompanying patients during leisure-time walking, assisting with daily activities, or facilitating opportunities for exercise can transform verbal encouragement into actual participation in physical activity. Such tangible support may contribute to reducing the risk and severity of hypertension by helping patients maintain regular physical activity (de Zorzi et al., 2024). However, familial motivation alone may be insufficient when external environmental conditions are unfavorable. The effectiveness of family support may depend on neighborhood-level factors, including the availability of comfortable walking infrastructure, perceived safety from crime, and traffic conditions (de Zorzi et al., 2024). When patients perceive their surroundings as safe and accessible, familial encouragement can more easily be translated into regular recreational physical activity.

Familial support encompasses emotional, informational, instrumental, and appraisal dimensions, all of which may contribute to patient motivation and adherence to healthy behaviors. Consistent emotional support can create a positive psychological environment, while informational support may help patients understand the importance of physical activity and routine health monitoring. Instrumental support can provide practical assistance, whereas appraisal support can reinforce patients' confidence in their ability to maintain healthy behaviors. Collectively, these forms of support may encourage patients to attend routine check-ups, remain physically active, and improve blood pressure control. This is consistent with World Health Organization (2023) guidelines, which emphasize that effective hypertension control through physical activity is influenced by a supportive social environment. Familial involvement can therefore function as a direct behavioral stimulus by providing reminders, encouragement, and logistical assistance that facilitate regular light-to-moderate physical activity.

Conversely, insufficient familial support may create barriers to maintaining an active lifestyle. Patients who lack emotional and instrumental support may experience lethargy, reduced self-efficacy, and a diminished perception of the importance of exercise, potentially increasing sedentary behavior. These conditions indicate that familial support is not merely a social resource but may also function as an important psychological component of chronic disease management. Adequate support may help prevent treatment fatigue, sustain motivation, and encourage patients to continue health-promoting behaviors despite the long-term demands of hypertension management.

The role of familial support may be particularly important among older adults. Age-related mobility limitations and possible cognitive changes can reduce the initiative and confidence of elderly patients to remain physically active without external encouragement. Family members can compensate for these limitations by providing supervision, motivation, companionship, and practical assistance during physical activities. Consequently, family-based approaches may be particularly valuable in supporting self-management among older patients. Previous research indicates that family involvement in self-management interventions can improve adherence to physical activity regimens and strengthen the continuity of healthy behaviors (Hasan et al., 2026).

The findings indicate that familial support is an important social and psychological factor associated with physical activity among hypertensive patients. The observed relationship suggests that improving family involvement may strengthen patients' motivation, self-efficacy, and ability to engage in regular physical activity. However, familial support should not be considered in isolation because physical activity is also shaped by broader environmental and behavioral conditions. Interventions aimed at improving

physical activity among hypertensive patients should therefore integrate family-based support with accessible exercise opportunities, safe neighborhood environments, appropriate health education, and ongoing monitoring by health professionals.

This study has several limitations. It was conducted at a single public health center with a specific demographic profile, which may limit the generalizability of the findings to populations with different characteristics or to more diverse urban and community settings. In addition, although the study focused on psychosocial factors, other potential confounding variables, including access to exercise facilities, environmental conditions, dietary habits, and other lifestyle factors, were not extensively controlled and may have influenced the observed physical activity patterns.

To truly understand why family support has such a powerful connection to a patient's physical activity, we have to look at the bigger picture and consider other hidden factors or confounders that are at play. First of all, a family's socioeconomic status makes a world of difference. Families with higher incomes and better education naturally find it much easier to step up and offer real, practical help. They can easily afford proper workout gear, gym memberships, or simply have the luxury of free time to exercise together. On the flip side, in households where money is tight, even the most encouraging words from family members might not lead to actual exercise because the reality of financial stress and time poverty gets in the way.

Second, we cannot ignore the physical reality of comorbidities, such as diabetes, obesity, or other heart conditions. When a patient is dealing with multiple health issues at once, they face severe physical limitations, intense fatigue, and a very real fear of overexertion. In these cases, simple family companionship isn't always enough; these patients often need specialized, medically supervised exercise routines. Lastly, the surrounding neighborhood itself acts as a major gatekeeper. As highlighted by de Zorzi et al. (2024), having a positive perception of your neighborhood like good walking infrastructure, safe traffic, and low crime rates directly cuts down the likelihood of uncontrolled hypertension. This means that while having a supportive family at home is a fantastic emotional catalyst, its success in the real world is ultimately shaped by the patient's medical burden, their financial reality, and how safe it is just to step outside their front door.

While this study offers valuable insights into chronic disease management, it does have a few limitations that should be kept in mind. First, because we used a cross-sectional design, we can only establish a snapshot correlation between family support and physical activity, we cannot definitively say that one directly causes or predicts the other. Second, our statistical analysis relied entirely on bivariate correlations without advanced multivariate modeling. This means we were not able to mathematically isolate the data from potential confounding factors like the patient's age, sex, occupation, educational background, or how long they have been living with hypertension. Finally, we measured physical activity using self-reported questionnaires.

This approach naturally leaves the door open to recall bias, where patients might not perfectly remember their activities, or social desirability bias, where they might slightly over-report their exercise levels to give a healthier impression. For future research, it would be highly beneficial to use longitudinal designs to track these behaviors over time, integrate multivariate regression to filter out confounders, and use objective tools like pedometers or accelerometers to capture more precise physical activity data.

4. CONCLUSION

This study demonstrates a strong and statistically significant positive correlation between familial support and physical activity levels among hypertensive patients. Most respondents perceived their family support as fair and engaged in moderate levels of physical activity. These findings indicate that comprehensive family support, including emotional, instrumental, informational, and appraisal support, is closely associated with a more active and healthy lifestyle among patients with hypertension. Strengthening family involvement, particularly among older patients, may therefore support adherence to regular physical activity and contribute to effective blood pressure management. However, because of the cross-sectional design, the findings indicate an association between familial support and physical activity rather than a direct causal or predictive relationship.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Nurul Khusnul Khotimah contributed to the conceptualization and design of the study, data collection, formal analysis, interpretation of the findings, and preparation of the initial manuscript draft. As the corresponding author, she also coordinated the research process, contributed to the methodological development, and critically revised the manuscript for important intellectual content. Andi Fahri Syam contributed to the study design, methodological supervision, data analysis, interpretation of the findings, and critical revision of the manuscript. Maria Ulfah Ashar contributed to the literature review, data collection, validation of the research instruments, interpretation of the findings, and critical revision of the manuscript. All authors reviewed and approved the final version of the manuscript for publication and agreed to be accountable for all aspects of the work.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

The authors declare that artificial intelligence (AI) tools were used solely to assist with language editing, grammar checking, and improving the clarity and readability of the manuscript. AI tools were not used to generate, fabricate, manipulate, or analyze the research data, nor to produce or alter the study results or scientific findings. All AI-assisted content was carefully reviewed and verified by the authors. The authors remain fully responsible for the accuracy, integrity, originality, and final content of the manuscript.

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