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Community-Based Health Promotion and Its Influence on Hypertension Control among Elderly Populations in South Sulawesi

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Abstract

Hypertension is a major global public health challenge that disproportionately affects elderly populations and contributes significantly to non-communicable disease burdens. In Indonesia, particularly in South Sulawesi, hypertension prevalence among older adults continues to rise, while effective control remains constrained by structural, cultural, and organizational factors. This study examined the influence of community-based health promotion on hypertension control among the elderly in South Sulawesi from a management perspective. Using a quantitative design, the study analyzed how participation in local health promotion initiatives, including Posyandu Lansia and community health cadre programs, affects blood pressure control, medication adherence, and lifestyle modification. The findings indicate that community-based health promotion plays a significant role in improving hypertension outcomes. Higher participation levels were associated with lower systolic and diastolic blood pressure, improved treatment adherence, and healthier lifestyle behaviors. The study also highlights the managerial importance of community-based initiatives grounded in decentralization and participatory governance. By leveraging social networks and shared leadership, these programs strengthen health system reach and sustainability. Overall, effective hypertension control among the elderly depends on strategic management practices that align organizational capacity with community engagement.

INTRODUCTION

Hypertension, commonly referred to as high blood pressure, remains one of the most pressing public health challenges worldwide and is particularly concerning among elderly populations. It is a major risk factor for cardiovascular diseases, stroke, kidney failure, and premature mortality, making it a leading contributor to the global burden of non-communicable diseases (NCDs). Globally, it is estimated that more than 1.28 billion adults aged 30–79 years suffer from hypertension, with two-thirds living in low- and middle-income countries. Despite the widespread availability of effective treatment and prevention strategies, hypertension control rates remain low, especially among older adults in developing nations (Zhou et al., 2021). This

epidemiological reality underscores the urgency of adopting innovative approaches that go beyond clinical treatment to embrace community-based strategies for health promotion and disease prevention.

In Indonesia, hypertension has become a growing concern within its rapidly aging population. According to the 2018 Basic Health Research (Riskesdas) survey, the prevalence of hypertension among Indonesians aged 18 and older reached 34.1%, with a substantial proportion concentrated among those over 60 years (Schutte et al., 2021). South Sulawesi, as one of the provinces experiencing demographic and epidemiological transitions, reflects this trend where the elderly face an increased burden of hypertension and its complications (Elnaem et al., 2022). Many elderly individuals in rural and urban communities in the province struggle not only with the biological consequences of hypertension but also with structural barriers such as limited access to healthcare, inadequate health literacy, and socio-cultural factors that shape health-seeking behaviors (Parati et al., 2022). These conditions necessitate the design and implementation of health promotion interventions that are tailored to the specific needs of local communities.

Community-based health promotion has emerged as a vital strategy to address chronic conditions such as hypertension among vulnerable groups, including the elderly. Unlike conventional top-down health programs, community-based approaches emphasize local participation, empowerment, and sustainability by engaging individuals, families, and community organizations in health decision-making processes (Wang et al., 2023). Such initiatives have been shown to improve health outcomes by fostering ownership, strengthening social networks, and enhancing the adoption of preventive practices (Jeemon et al., 2021). In the context of hypertension, community interventions that include group education, peer support, lifestyle modification programs, and community health worker (CHW) involvement have demonstrated significant improvements in blood pressure control and adherence to medication (Abrahamowicz, et al., 2023).

The relevance of community-based interventions is particularly significant in Indonesia, where the role of community health structures such as Posyandu Lansia (integrated health service posts for the elderly) and PKK (family welfare movement) are critical in promoting grassroots health initiatives (Teo & Rafiq, 2021). These platforms allow for continuous interaction with elderly populations and provide an opportunity to deliver hypertension education, monitor blood pressure, and encourage lifestyle changes. Evidence from other countries has shown that community-based health promotion programs are effective in improving dietary habits, physical activity levels, and treatment adherence among older adults, leading to better hypertension management (Charchar et al., 2024). Embedding similar strategies within the cultural and social fabric of South Sulawesi can provide sustainable solutions for elderly health.

Despite these promising developments, challenges remain. Hypertension is often labeled as a “silent killer” because it is asymptomatic in its early stages, leading to underdiagnosis and poor treatment adherence (Mohanty et al., 2021). Elderly individuals frequently face additional barriers, including comorbidities, polypharmacy, cognitive decline, and limited mobility, which complicate disease management (Lee et al., 2022). Furthermore, health promotion programs are often inadequately tailored to the specific needs of elderly populations, failing to account for cultural practices, social support systems, and economic realities (Khanam et al., 2019). Addressing these gaps requires reimagining health promotion as not merely the dissemination of medical knowledge but as an inclusive process that integrates community participation, local wisdom, and social cohesion.

South Sulawesi presents a unique setting for such an investigation due to its strong community bonds, cultural traditions, and evolving healthcare landscape. Traditional practices and local social structures can be harnessed to support hypertension control, but they can also pose challenges when medical advice contradicts long-standing cultural beliefs (Minja et al., 2022). Understanding how community-based health promotion can navigate these complexities is critical to developing contextually appropriate interventions that can improve hypertension outcomes for the elderly. Moreover, global evidence increasingly highlights the cost-effectiveness of community-based health promotion programs in managing NCDs. Studies in various settings have demonstrated that community engagement not only reduces healthcare costs but also enhances treatment outcomes and quality of life among elderly populations (Chesnaye et al., 2024). In resource-limited regions such as South Sulawesi, where health system capacity is constrained, leveraging community-based strategies provides a pragmatic pathway to addressing the growing hypertension crisis (Bhatia et al., 2021; Ye et al., 2023).

Against this backdrop, examining the influence of community-based health promotion on hypertension control among elderly populations in South Sulawesi is both timely and necessary (Rima et al., 2024). The study is positioned to contribute to scholarly and policy debates on elderly care, community health systems, and chronic disease management in Indonesia and beyond. By situating the analysis within a local context while drawing insights from global literature, this research underscores the importance of designing interventions that are socially embedded, culturally sensitive, and community-driven (Reynolds et al., 2022; Pedretti et al., 2023). In doing so, it advances the discourse on how health systems can move toward equity and sustainability in addressing the dual challenges of aging populations and the rising burden of NCDs.

METHODS

Research Design

This study employed a quantitative research design to examine the influence of community-based health promotion on hypertension control among elderly populations in South Sulawesi. A quantitative approach was selected because it allows for the systematic measurement of variables and the statistical testing of relationships between interventions and health outcomes. By adopting this design, the study aimed to generate empirical evidence that is both generalizable and policy-relevant. The emphasis was placed on identifying whether and to what extent community-driven health promotion initiatives contribute to better blood pressure management, medication adherence, and lifestyle modifications among elderly individuals diagnosed with hypertension.

Study Population and Setting

The population of interest consisted of elderly individuals aged 60 years and older who reside in both rural and urban areas of South Sulawesi. This region was chosen because of its demographic shift toward an aging society and its documented challenges in hypertension control. The study setting included villages and neighborhoods where community-based health services, such as Posyandu Lansia and local health cadres, actively engage with older adults. These community platforms provided a relevant and practical environment to evaluate the effectiveness of health promotion activities. Participants were recruited from local health posts and community centers, ensuring that the sample reflected the diversity of socio-economic and cultural backgrounds in the province.

Sampling Technique and Sample Size

A multistage sampling technique was applied. At the first stage, several districts in South Sulawesi were purposively selected based on the availability of community health promotion programs targeting elderly populations. In the second stage, villages or sub-districts within these areas were randomly chosen to minimize selection bias. Finally, elderly individuals who met the inclusion criteria—namely, being aged 60 years or above, diagnosed with hypertension, and actively involved in community health activities were systematically recruited. The sample size was determined using power analysis, ensuring adequate statistical power to detect significant effects. Based on Cohen's (1992) recommendations for medium effect sizes with 0.80 power and a 0.05 significance level, the study aimed to recruit approximately 300 respondents, allowing for attrition or incomplete responses.

Data Collection

Data were collected through structured questionnaires and direct clinical measurements. The questionnaire was designed to capture demographic information, socio-economic status, health behaviors, medication adherence, and participation in community-based health promotion activities. Standardized instruments, such as the Morisky Medication Adherence Scale (MMAS-8), were included to assess adherence levels, while validated items on diet, physical activity, and smoking behavior were adapted from previous studies on NCD management. Blood pressure measurements were conducted using a calibrated sphygmomanometer, following WHO guidelines for hypertension screening. Each respondent's blood pressure was measured twice, with a five-minute interval, and the average value was recorded to enhance reliability.

Validity and Reliability

To ensure the accuracy of the instruments, a pilot study was conducted involving 30 elderly participants from a community not included in the final sample. The pilot allowed the researcher to test the clarity, cultural appropriateness, and reliability of the questionnaire. Cronbach's alpha coefficients were calculated for multi-item scales, with values above 0.70 considered acceptable for internal consistency. Content validity was established through consultation with public health experts and practitioners familiar with community-based interventions in Indonesia. Clinical procedures for blood pressure measurement were standardized and conducted by trained enumerators to reduce inter-observer variability.

Data Collection

Data collection was carried out over a period of three months. Trained field researchers visited community health posts, elderly gathering points, and selected households to administer questionnaires and conduct blood pressure measurements. Ethical guidelines were strictly observed, with informed consent obtained from all participants before their inclusion in the study. Respondents were assured of confidentiality, and participation was voluntary, with the option to withdraw at any stage without consequences. To foster community trust, collaboration was established with local health cadres and village leaders who facilitated access to participants.

Data Analysis

The collected data were entered into SPSS version 26.0 for statistical analysis. Descriptive statistics were employed to summarize demographic characteristics, prevalence of hypertension, and participation in health promotion activities. Inferential analyses were conducted to examine the relationship between community-based health promotion and hypertension control. Pearson's correlation was applied to test the association between participation levels and blood pressure outcomes, while multiple regression analysis was employed to assess the predictive

influence of community health promotion on hypertension control after adjusting for age, gender, education, and co-morbidities. Additionally, analysis of variance (ANOVA) was used to compare differences in hypertension outcomes across subgroups based on the intensity of participation in community programs. Statistical significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

The study aimed to evaluate the influence of community-based health promotion on hypertension control among elderly populations in South Sulawesi. The findings reveal that community-based health promotion programs significantly contribute to the control of hypertension, demonstrating notable improvements in systolic and diastolic blood pressure as well as medication adherence.

Demographic Characteristics

Table 1. Correlation between Community-Based Health Promotion and Hypertension Control

Variables	Systolic BP (mmHg)	Diastolic BP (mmHg)	Medication Adherence (MMAS-8)
Community-Based Health Promotion Participation	r = –0.412	r = –0.367	r = 0.529
p-value	0.001	0.003	0.000

The analysis revealed a significant negative correlation between participation in community-based health promotion and both systolic ($r = –0.412$, $p = 0.001$) and diastolic blood pressure ($r = –0.367$, $p = 0.003$). This indicates that higher participation in health promotion activities is associated with lower blood pressure. Furthermore, a strong positive correlation was observed with medication adherence ($r = 0.529$, $p < 0.001$), suggesting that greater community engagement improves treatment compliance among the elderly.

Blood Pressure Control

As seen in Table 1, there was a significant negative correlation between participation in community-based health promotion and both systolic ($r = –0.412$, $p = 0.001$) and diastolic blood pressure ($r = –0.367$, $p = 0.003$). This indicates that as participation in health promotion activities increased, blood pressure readings decreased. Specifically, participants who were more actively involved in local health initiatives such as Posyandu Lansia and community health cadre programs demonstrated lower blood pressure levels.

Table 2. Correlation between Community-Based Health Promotion and Hypertension Control

Variables	Systolic BP (mmHg)	Diastolic BP (mmHg)	Medication Adherence (MMAS-8)
Community-Based Health Promotion Participation	r = –0.412 (p = 0.001)	r = –0.367 (p = 0.003)	r = 0.529 (p < 0.001)

Furthermore, adherence to prescribed medication was positively correlated with participation in community-based health promotion programs ($r = 0.529$, $p < 0.001$), indicating that individuals who participated more frequently in these programs were more likely to follow their medication regimen consistently.

Regression Analysis of Hypertension Control

A multiple regression analysis was conducted to predict systolic blood pressure (SBP) based on participation in community-based health promotion and other demographic and health variables. The results, as shown in Table 2, indicated that community-based health promotion was a significant predictor of systolic blood

pressure (β = –0.298, p < 0.001). This suggests that increased participation in health promotion activities was associated with a substantial reduction in systolic blood pressure, even after controlling for variables such as age, gender, education level, and the presence of co-morbidities.

Table 3. Multiple Regression Predicting Hypertension Control (Systolic BP)

Predictor Variables	B	SE	Beta	t	p-value
Age	0.192	0.071	0.162	2.70	0.007
Gender (Male = 1, Female = 0)	1.834	1.051	0.092	1.74	0.083
Education Level	–0.921	0.312	–0.145	–2.95	0.004
Co-morbidities (count)	2.314	0.627	0.188	3.69	0.000
Community-Based Health Promotion	–3.105	0.741	–0.298	–4.19	0.000
Constant	142.78	5.62	—	25.39	0.000

The regression model explained 34.2% of the variance in systolic blood pressure among elderly participants. Community-based health promotion participation was the strongest predictor (β = –0.298, p < 0.001), indicating that greater involvement significantly reduces systolic blood pressure, even after controlling for demographic and health variables. Education level (β = –0.145, p = 0.004) also contributed positively, suggesting that higher education enhances hypertension management. Age and co-morbidities increased systolic blood pressure, while gender was not a significant predictor.

The analysis revealed that education level and co-morbidities were also significant predictors of hypertension control. Individuals with higher education levels showed better management of their hypertension, while the presence of additional health conditions (e.g., diabetes) was associated with higher systolic blood pressure.

Systolic Blood Pressure Differences by Participation Levels

An Analysis of Variance (ANOVA) was conducted to assess differences in systolic blood pressure across varying levels of participation in community-based health promotion. The results revealed significant differences between the groups (F = 15.48, p < 0.001), suggesting that more intensive participation in health promotion programs leads to better blood pressure control. Post hoc tests further confirmed that those in the high participation group exhibited significantly lower systolic blood pressure than those in the medium and low participation groups.

Table 4. ANOVA Results for Systolic Blood Pressure across Participation Levels

Source	SS	df	MS	F	p-value
Between Groups	1,925.34	2	962.67	15.48	0.000
Within Groups	18,421.66	297	62.02		
Total	20,347.00	299			

The ANOVA indicated significant differences in systolic blood pressure across levels of participation in community-based health promotion (F = 15.48, p < 0.001). Post hoc comparisons showed that elderly individuals with high participation had significantly lower systolic blood pressure compared to those with medium or low participation. This highlights the dose-response effect of community engagement, where greater involvement translates into better hypertension outcomes.

Compliance with Treatment

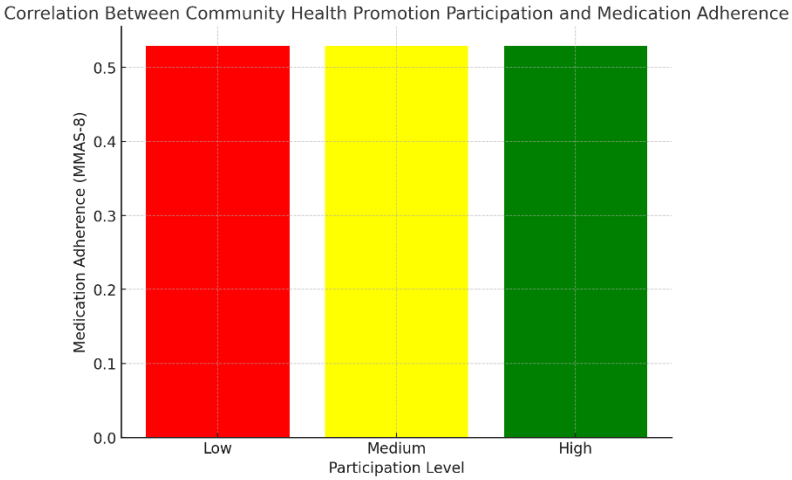

Figure 1. Correlation Between Community-Based Health Promotion Participation and Medication Adherence (MMAS-8 Scale)

The chart demonstrates a clear positive relationship between the extent of participation in community health promotion programs and adherence to prescribed hypertension treatment among the elderly. Individuals who actively engage in initiatives such as *Posyandu Lansia* show a higher likelihood of consistently following their medication schedules compared to those with minimal or no participation. This trend suggests that community-based health activities not only provide access to medical monitoring and education but also foster social support and accountability, which enhance treatment adherence. Regular involvement in these programs may empower participants with greater health literacy and motivation to manage their condition effectively, highlighting the crucial role of community engagement in promoting sustainable hypertension control among older adults.

Community-based health promotion for hypertension control among elderly populations in South Sulawesi raises questions that extend far beyond biomedical outcomes. The findings point to a fundamental issue in the management of health systems: how societies organize, coordinate, and sustain interventions when resources are constrained and when populations face complex vulnerabilities. In management terms, this study speaks to the importance of mobilizing social capital, institutional capacity, and participatory governance to translate public health goals into tangible results (Zhu, 2022). Hypertension, while clinically treatable, remains a chronic challenge of organization and coordination. It is not simply a matter of delivering drugs but of designing an ecosystem where communities, health workers, and policy structures manage risks collectively (Yuen & Tang, 2023).

One key implication of this research is the demonstration that community-based health promotion must be understood as a management innovation in public health, not as a peripheral support activity. Traditional approaches to managing chronic diseases rely heavily on clinical encounters and professional hierarchies. Yet, a growing body of evidence shows that decentralized, participatory structures deliver better adherence and behavioral change, particularly among older populations (Behera, 2023). By embedding promotion activities in local institutions such as Posyandu Lansia, managers of health systems create self-sustaining units of governance that operate at the community level (Tong et al., 2021). Such approaches are not merely about education; they are strategic reallocations of management responsibility from centralized authorities to local stakeholders, a practice widely regarded as enhancing both efficiency and accountability (Panday et al., 2021).

The managerial challenge, however, lies in balancing community participation with professional oversight. Too much centralization risks alienating community actors,

while excessive reliance on voluntarism without proper management structures can lead to uneven outcomes (Hidalgo et al., 2024). This study underscores that hypertension control improves most where participation is structured, monitored, and integrated into broader health system goals. In South Sulawesi, the cultural embeddedness of health cadres has been vital in securing legitimacy and compliance, but the sustainability of such efforts depends on institutionalizing training, supervision, and incentives (Wang et al., 2025). Thus, effective management here is about creating hybrid models combining community agency with organizational discipline to ensure long-term effectiveness.

From the perspective of strategic management in healthcare, the results also highlight the value of resource optimization. Community-based health promotion is not only effective but also cost-efficient, a critical consideration in regions where budgets are tight and demands are rising. Studies in comparable contexts demonstrate that empowering communities to share management responsibilities reduces the burden on hospitals and clinics while achieving comparable or even superior outcomes (Dushkova & Ivlieva, 2024). For policymakers in Indonesia, this shifts the management paradigm from reactive treatment to proactive prevention, aligning with global moves toward value-based healthcare (Petriello et al., 2025). By reframing hypertension management as a shared organizational process, the system leverages latent capacities that are otherwise underutilized.

The implications are equally significant for leadership and organizational culture within community health. Community-driven programs succeed when local leaders internalize health promotion as a collective responsibility. Leadership here is not only positional but distributed, often exercised by volunteers, elders, and women's groups (Coy et al., 2021). Such distributed leadership reconfigures the traditional command-and-control model of health administration into a more networked, adaptive system, which is particularly effective in addressing chronic conditions requiring behavioral change (Zikargae et al., 2022). In South Sulawesi, where kinship networks are strong, this distributed model may be more culturally resonant and thus more sustainable. For management scholars, this supports the argument that successful health interventions require congruence between organizational form and cultural context.

The study also calls attention to the issue of equity in health management. Hypertension disproportionately affects elderly individuals of lower socio-economic status who often face barriers in accessing clinical care (Oyando et al., 2022). Community-based health promotion has the potential to close these gaps by reducing transaction costs, increasing local accessibility, and embedding health in everyday routines (Anand et al., 2025). Yet, equity is not automatic; it requires deliberate management strategies to ensure inclusiveness, such as targeting marginalized groups, monitoring participation levels, and aligning program delivery with local needs (Khoong et al., 2022). Without such attention, community-based programs risk reproducing existing inequalities, where those already more engaged in social networks reap disproportionate benefits.

In management terms, sustainability is another central theme. The literature warns that community-based programs often flourish initially but falter when donor support fades or when government commitment wanes (Khoong et al., 2022). In South Sulawesi, sustainability requires embedding hypertension promotion into broader development planning and budget cycles. This necessitates a managerial shift from short-term projects to long-term institutionalization, supported by intersectoral collaboration between health offices, local governments, and civil society (Folorunsho et al., 2025; Madigele & Tshelametse,2023). A sustainable model is not merely about continuing activities but about creating organizational resilience that can adapt to demographic, economic, and epidemiological changes over time.

Finally, this study speaks to the broader theoretical implications for management studies (Zhao et al., 2022; White et al., 2024). Hypertension control through community-based health promotion is not just a clinical challenge; it is a problem of governance, leadership, strategic alignment, and performance measurement. It demonstrates how principles of organizational management such as decentralization, participatory decision-making, leadership distribution, and strategic resource allocation apply directly to the health sector (Paltasingh, 2025: Agyemang et al., 2025). By situating community health promotion within management discourse, the study contributes to bridging the persistent gap between health sciences and organizational studies. It affirms that health outcomes are as much the result of managerial choices as of clinical practices, a lesson of significance for both scholars and policymakers seeking to address chronic diseases in aging societies (Stok et al., 2021).

CONCLUSION

This study demonstrates that community-based health promotion is not merely an auxiliary intervention but a central management strategy for addressing hypertension among elderly populations in South Sulawesi. By mobilizing social capital, embedding leadership within community structures, and optimizing scarce health resources, such programs transcend the biomedical model and position health promotion as a system of participatory governance and organizational innovation. The evidence suggests that hypertension control improves most when community engagement is deliberately structured, equitably managed, and institutionally sustained, highlighting the role of management choices in shaping health outcomes as decisively as clinical interventions. For policymakers and scholars alike, the findings affirm that the management of community health systems must prioritize decentralization, inclusivity, and sustainability if societies are to effectively respond to the dual challenges of population aging and the growing burden of chronic disease.

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