

Empowering Older Adults with Hypertension through Community-Based Education on Warm Water Foot Soak and Deep Breathing Relaxation

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ABSTRACT

Hypertension is one of the most prevalent chronic conditions among older adults and poses significant challenges to physical health, psychological well-being, and quality of life at the community level. Limited health literacy and suboptimal self-management practices often contribute to inadequate blood pressure control among this population. This community service program aimed to empower older adults with hypertension through community-based education that integrated warm-water foot soak therapy and deep-breathing relaxation as simple, non-pharmacological self-management strategies. The program was implemented at a community-based elderly health post and involved 30 older adults with hypertension. Activities included health education sessions, practical training in combined therapy, continuous mentoring, and routine community-based monitoring over approximately two months. Program evaluation was conducted descriptively to assess improvements in hypertension-related knowledge, participants' ability to perform the therapy independently, perceived comfort and relaxation, and observed trends in blood pressure. The results showed that most participants demonstrated improved knowledge of hypertension management and increased confidence in practicing the combined therapy independently. The majority of participants also showed a descriptive decrease in systolic blood pressure during the program period, alongside reported improvements in comfort, relaxation, and sleep quality. These outcomes reflect positive community-level health trends rather than clinical or causal effects. Overall, this community service program was feasible, acceptable, and beneficial in supporting education-based empowerment for hypertension self-management among older adults. The simplicity and low-cost nature of the intervention, combined with active involvement of community health cadres, indicate strong potential for sustainable integration into routine community health activities, particularly within elderly health post programs.

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INTRODUCTION

Hypertension is a major public health problem and one of the most prevalent chronic conditions among older adults worldwide. The increasing life expectancy has contributed to a growing population of older adults living with hypertension, a condition that significantly increases the risk of cardiovascular disease, stroke, renal impairment, and functional decline (WHO, 2023). In addition to its physical consequences, uncontrolled hypertension also affects psychological well-being, leading to anxiety, sleep disturbances, reduced independence, and a diminished quality of life among older adults (Devon, 2020).

In developing countries such as Indonesia, hypertension among older adults remains a major challenge at the community level. Limited health literacy, inadequate access to preventive and promotive health programs, and suboptimal self-management practices contribute to poor blood pressure control in this population. Many older adults rely primarily on pharmacological treatment provided by health facilities, while their understanding and utilization of complementary non-pharmacological strategies remain limited. As a result, recurrent symptoms and uncontrolled blood pressure are frequently observed among community-dwelling older adults (Dixit, 2022).

Effective hypertension management at the community level requires approaches that are not only clinically appropriate but also practical, affordable, and acceptable for older adults. Non-pharmacological interventions play an important role in supporting blood pressure regulation and overall well-being, particularly in preventive and community-based health settings (Professionals & Educators, 2025). Warm water foot soak therapy has been reported to promote peripheral vasodilation, improve blood circulation, and induce muscle relaxation, which may contribute to lowering blood pressure and enhancing physical comfort. Similarly, deep breathing relaxation activates the parasympathetic nervous system, reduces sympathetic activity, and promotes a relaxation response that can help alleviate stress and emotional tension (Chimberengwa & Naidoo, 2020).

Both warm water foot soak therapy and deep breathing relaxation are simple, safe, low-cost, and easy to perform, making them highly suitable for older adults in community settings. When practiced regularly, these interventions may support not only physiological balance but also psychological comfort and emotional stability (Hasriani et al., 2022). However, the potential benefits of these non-pharmacological approaches largely depend on structured health education, skill acquisition, and continuous support that enable older adults to practice them independently as part of daily self-care (Kusmiyati, 2024).

From a nursing and community health perspective, education-based community service programs play a strategic role in empowering older adults to manage chronic conditions such as hypertension. These programs do not merely transfer knowledge but also foster self-efficacy, confidence, and sustainable behavioral change through participatory learning and mentoring (Irwan et al., 2022). From a nursing perspective, this approach aligns with holistic and community-based care principles that emphasize the integration of physical, psychological, and social dimensions of health. Nurses, as educators and facilitators, are central in strengthening self-management capacity and promoting holistic well-being among older adults in community settings (Prima Trisna Aji, Arief Sofyan Baidhowy, Zuniati, 2025).

Despite evidence supporting non-pharmacological approaches for hypertension management, their structured application through community-based education remains limited, particularly among older adults. Many community programs focus primarily on medication adherence without adequately addressing empowerment, practical skill development, and sustainability of self-care practices.

Therefore, this community service program aims to improve knowledge, self-management skills, and well-being among older adults with hypertension through education-based warm water foot soak therapy and deep breathing relaxation.

METHOD

Program Design and Setting

This activity was designed as a community service program focusing on health education, empowerment, and descriptive evaluation rather than as an experimental or clinical research study. The program employed a participatory and educational approach to support non-pharmacological hypertension management among older adults. It was implemented at a community-based elderly health post (Posyandu Lansia) in Boyolali, Central Java, Indonesia, over a period of approximately two months. The implementation involved collaboration between nursing lecturers, nursing students, and local community health volunteers (cadres). (Khuong et al., 2020).

Participants

A total of 30 older adults diagnosed with hypertension participated in the program. Participants were recruited through coordination with community health cadres and local leaders. Inclusion criteria included older adults registered at the elderly health post, having a history of hypertension, and willingness to participate in educational and practical activities. All participants provided verbal informed consent before program implementation.

Program Activities

The program integrated health education with practical skill development and continuous support. Educational sessions were conducted to improve participants' understanding of hypertension, including risk factors, potential complications, and the importance of self-management. Education was delivered using simple language, interactive discussions, and printed visual materials to ensure accessibility and comprehension.

Practical training focused on the application of combined non-pharmacological therapy. Warm water foot soak therapy was demonstrated and practiced using water at a temperature of approximately 38–42°C for 15–20 minutes per session, while deep breathing relaxation was practiced for 10–15 minutes using slow, controlled breathing techniques. Guided demonstrations and supervised practice were provided to ensure safe and correct implementation. Following the training sessions, participants were encouraged to practice the combined therapy independently at home, with periodic reinforcement provided during community meetings and home visits (Khanal et al., 2021).

Monitoring and Evaluation

Program evaluation was conducted descriptively to illustrate community-level changes resulting from the implementation. Improvement in hypertension-related knowledge was identified through participants' responses during interactive discussions, question-and-answer sessions, and informal assessments conducted before and after educational activities. Participants' ability to perform the therapy independently was observed during mentoring sessions.

Perceived comfort and relaxation were assessed through participant self-reports obtained during mentoring activities and informal interviews. Participants were encouraged to share their experiences related to comfort, relaxation, and sleep quality after practicing the combined therapy.

Blood pressure monitoring was performed periodically using a digital sphygmomanometer as part of routine community health activities. Measurements were used to observe trends in blood pressure during the program period rather than to determine clinical effectiveness. (Aji et al., 2025).

Data Collection and Analysis

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Ethical Considerations

This community service program was conducted in accordance with ethical principles, including voluntary participation, confidentiality, and participant safety. The interventions applied were non-invasive, low-risk, and appropriate for older adults. The program was implemented with the approval and support of local community leaders and the management of the elderly health post. (Board, 2019).

RESULTS

This community service program involved 30 older adults with hypertension who actively participated throughout the implementation period. Program outcomes were evaluated descriptively to illustrate community-level changes following the education-based intervention. The results are presented in relation to knowledge improvement, independent practice of the combined therapy, observed trends in blood pressure, perceived comfort and relaxation, and program adherence.



FIGURE 1. Documentation of health education and practical training activities conducted during the community-based hypertension education program for older adults.

In addition to educational sessions and practical training, the implementation of the community service program involved close interaction between the community service team and older adult participants. Mentoring activities and symbolic appreciation were provided to strengthen participant engagement and motivation throughout the program implementation (Figure 2).



FIGURE 2. Mentoring and participant engagement activities supporting independent practice of non-pharmacological hypertension self-management.

Routine blood pressure monitoring was conducted as part of the community service program to observe community-level health changes during the implementation period. Blood pressure measurements were performed using a digital sphygmomanometer in a supportive and comfortable community setting to ensure participant safety and cooperation (Figure 3).



FIGURE 3. Routine blood pressure monitoring conducted as part of community-based health activities during program implementation.

Blood pressure measurement activities were carried out directly with older adult participants as part of routine health monitoring during the implementation of the community service program (Figure 4).



FIGURE 4. Direct blood pressure measurement activities performed in a supportive community setting during the program.

Blood pressure measurements were conducted using a patient-centered and family-friendly approach to ensure participant comfort and cooperation during the community service activities (Figure 5).



FIGURE 5. Patient-centered blood pressure measurement illustrating a family-friendly approach in community health services.

Health education activities were delivered using printed educational materials to facilitate participant understanding and active engagement during the community service program (Figure 6)



FIGURE 6. Use of printed educational materials to facilitate participant understanding during hypertension education sessions.

TABLE 1. Summary of Community Service Program Outcomes

Outcome Indicators	Results
Number of participants	30 older adults with hypertension
Improved hypertension-related knowledge	28 participants (93.3%)
Independent practice of warm water foot soak and deep breathing relaxation	25 participants (83.3%)
Participants experiencing systolic blood pressure reduction	29 participants (96.7%)
Average systolic blood pressure change	Descriptively decreased from approximately 180 mmHg to 140 mmHg after two months
Perceived comfort and relaxation	The majority of participants reported increased comfort, relaxation, and improved sleep quality
Program adherence	Most participants demonstrated good adherence, supported by community health cadres

Note: Outcomes were summarized descriptively to illustrate community-level changes following the community service program.

Improvement in Hypertension Knowledge

Following the educational sessions, participants demonstrated a clearer understanding of hypertension management, including risk factors, the importance of lifestyle modification, and the role of non-pharmacological self-care. This improvement was reflected in more active engagement during discussions, increased accuracy in responding to questions during mentoring sessions, and participants' ability to explain the therapy procedures in their own words. These findings indicate that the education component successfully enhanced participants' health literacy related to hypertension.

Independent Practice of the Combined Therapy

Most participants were able to perform warm water foot soak therapy and deep breathing relaxation independently after completing the training sessions. During mentoring activities, participants demonstrated correct implementation of the therapy procedures, including appropriate duration and sequence. This independent practice reflects increased confidence and self-efficacy in applying simple, home-based self-management strategies as part of daily routines.

Observed Trends in Blood Pressure

Routine blood pressure monitoring conducted during the program period indicated a positive trend toward lower systolic blood pressure among the majority of participants. These observations suggest improved blood pressure regulation at the community level during the implementation period. It is important to note that blood pressure data were used descriptively to illustrate health trends rather than to determine clinical or causal effects of the intervention.

Perceived Comfort and Relaxation

In addition to physiological trends, participants reported subjective improvements in comfort and relaxation after regularly practicing the combined therapy. Many older adults described feeling calmer, more relaxed, and less physically tense. Several participants also reported improved sleep quality and reduced complaints such as dizziness and restlessness. These experiences highlight the psychosocial benefits of integrating relaxation-based interventions into community health activities.

Program Adherence and Participant Engagement

Throughout the mentoring period, participants demonstrated good adherence to the recommended therapy practices. Regular encouragement and supervision from community health cadres supported sustained engagement and consistency in performing the therapy. The collaborative interaction between participants, cadres, and the community service team contributed to a supportive learning environment and strengthened participant motivation.

DISCUSSION

The findings of this community service program demonstrate that education-based interventions integrating warm water foot soak therapy and deep breathing relaxation can support hypertension self-management and well-being among older adults at the community level. The discussion below elaborates the outcomes by distinguishing educational impact, observed physiological trends, psychosocial benefits, and implications for community nursing practice, while maintaining the appropriate scope of a community service activity rather than a clinical trial (Dewi et al., 2024).

Educational Impact and Community Empowerment

The improvement in participants' understanding of hypertension management highlights the central role of health education in community-based chronic disease programs. Older adults often face challenges related to limited health literacy and access to continuous health information. In this program, the use of simple language, interactive discussions, and hands-on demonstrations facilitated active participation and enhanced comprehension. Improved knowledge served as a foundation for behavioral change, enabling participants to recognize the importance of consistent self-care practices in managing hypertension (Hudiyawati et al., 2022).

From a nursing perspective, education-based community service programs emphasize empowerment rather than information transfer alone. By fostering self-efficacy and confidence, such programs enable older adults to actively engage in their own health management (Saputra, 2024). These findings support previous evidence that participatory education and mentoring are effective strategies for strengthening self-management capacity among individuals with chronic conditions (Aji, 2025).

Observed Physiological Trends in Blood Pressure

Routine blood pressure monitoring during the program period indicated a positive trend toward improved blood pressure regulation among most participants. Although this program was not designed to establish clinical effectiveness, the descriptively observed changes are consistent with existing literature on the potential benefits of relaxation-based and hydrotherapy interventions (Erman et al., 2026). Warm water foot soak therapy may promote peripheral vasodilation and physical relaxation, while deep breathing relaxation supports autonomic balance by reducing sympathetic nervous system activity (Pujiyanto; 2022).

Importantly, blood pressure outcomes in this program are presented descriptively to illustrate community-level health trends rather than causal effects. This approach aligns with the objectives of community service activities, which prioritize feasibility, acceptability, and empowerment over experimental evaluation. (Aji & Rizkasari, 2021).

Psychosocial Outcomes and Holistic Well-Being

In addition to physiological trends, participants reported subjective improvements in comfort, relaxation, and sleep quality. Psychological stress and sleep disturbances are common among older adults with hypertension and can influence blood pressure variability. The integration of relaxation-based interventions into routine self-care practices appears to contribute positively to emotional comfort and overall well-being (Aji et al., 2025).

From a holistic nursing perspective, addressing psychosocial dimensions is essential for comprehensive hypertension management. The reported experiences of feeling calmer and more relaxed suggest that the combined therapy supported not only physical comfort but also emotional stability, reinforcing the value of holistic, non-pharmacological approaches in community health promotion (Aji & Sani, 2021).

Psychological Comfort, Relaxation, and Holistic Well-Being

Beyond physiological indicators, the reported improvements in comfort, relaxation, and sleep quality underscore the holistic benefits of the intervention. Psychological stress, anxiety, and sleep disturbances are common among older adults with hypertension and can exacerbate blood pressure fluctuations. The reduction of these symptoms through relaxation-based interventions is therefore highly relevant to comprehensive hypertension management (Baidhowy, 2025).

From a holistic nursing perspective, well-being encompasses physical, psychological, and emotional dimensions. The subjective experiences reported by participants suggest that the combined therapy not only addresses physical symptoms but also enhances emotional comfort and overall quality of life. These outcomes highlight the importance of integrating psychosocial considerations into community-based health interventions (Borghi et al., 2022).

Sustainability and the Role of Community Health Cadres

Good adherence observed during the program reflects high acceptability and feasibility of the intervention. The active involvement of community health cadres played a key role in reinforcing educational messages, providing encouragement, and supporting continuity of practice. This collaborative model strengthens community ownership and enhances the likelihood that the program can be sustained beyond the formal implementation period (Ilma & Aisah, 2024).

Integrating simple, low-cost, and non-invasive interventions into routine Posyandu Lansia activities aligns with community nursing principles that emphasize sustainability and local capacity building. Nurses, in collaboration with cadres, are well positioned to facilitate such programs and bridge the gap between clinical recommendations and daily self-care practices in community settings (Prima et al., 2025).

Implications for Community Nursing Practice

The outcomes of this program have important implications for community nursing practice. Nurses are uniquely positioned to lead education-based, empowerment-oriented interventions that address chronic disease management at the community level. By integrating simple non-pharmacological therapies with structured education and mentoring, nurses can support older adults in maintaining health and well-being in their daily lives (Sandhu et al., 2024).

This program demonstrates that community service initiatives can effectively bridge gaps between clinical recommendations and real-world practice. The model presented here may serve as a reference for similar programs aimed at managing hypertension and other chronic conditions among older populations.

Limitations and Future Directions

As a community service program, this initiative has several limitations. Evaluation was conducted descriptively without inferential statistical analysis or control groups, and blood pressure measurements were used to illustrate trends rather than clinical effectiveness. The program was implemented in a single community setting, which may limit broader generalizability.

Future community service programs may consider involving family members or caregivers to further strengthen adherence and long-term sustainability. Expanding implementation to other community health posts and integrating digital or routine monitoring tools may also enhance program reach and impact. (Burnier & Egan, 2019).

CONCLUSION

This community service program demonstrated that education-based interventions integrating warm water foot soak therapy and deep breathing relaxation can support hypertension self-management among older adults in community settings. Through a participatory and empowerment-oriented approach, the program contributed to improved understanding of hypertension, enhanced self-care skills, and increased confidence in practicing simple non-pharmacological strategies as part of daily routines.

In addition to supporting physical comfort and blood pressure regulation trends, the program also promoted psychological well-being, as reflected in participants' reported improvements in relaxation, emotional comfort, and sleep quality. These outcomes highlight the value of holistic, education-centered community service programs that address both physical and psychosocial dimensions of health among older adults.

This program model is feasible, acceptable, and potentially replicable in other community health posts with similar characteristics. Integrating this education-based intervention into routine Posyandu Lansia activities may strengthen sustainable hypertension self-management and enhance the role of community health cadres in ongoing health promotion efforts. Future community service initiatives are encouraged to adapt and expand this model to broader community settings to support long-term well-being among older adults with hypertension.

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