

INTEGRATING HEALTH EDUCATION AND PHYSICAL ACTIVITY TO REDUCE HYPERTENSION RISK: A COMMUNITY ENGAGEMENT APPROACH

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Abstract:

Background: Hypertension is a major contributor to global morbidity and mortality. In Indonesia, its prevalence among adults has increased significantly, reaching 34.1% in 2018. Banten Province mirrors this trend, particularly in urban areas, due to poor dietary habits, inactivity, and stress. Modifiable and non-modifiable risk factors contribute to the burden, making community-based interventions essential. **Methods:** This community service initiative aimed to reduce hypertension risk through health education and physical activity. It targeted 30 adults and elderly residents of RT 02/RW 01, Babakan Subdistrict, South Tangerang. The program integrated an interactive educational session based on the local CERIA campaign (Limit salt, Take medication, Monitor blood pressure, Manage stress, Exercise, and Don't smoke) and a tailored group exercise activity. Local health cadres were actively involved. **Results:** Participants showed good knowledge of hypertension but struggled to adopt healthy behaviors such as low-sodium diets, regular exercise, and stress management. Many were unaware of genetic risk factors and lacked routine blood pressure monitoring. Group exercise sessions enhanced physical engagement and community bonding. Gender disparities were observed, with higher hypertension prevalence among women, particularly postmenopausal. **Conclusion:** The integration of the CERIA program and group exercise effectively promoted awareness and encouraged lifestyle modification. Sustainable health promotion requires ongoing community participation, cadre empowerment, and accessible education. This approach demonstrates how localized, participatory strategies can transform hypertension prevention into a collective health movement.

Keywords: Hypertension, health education, physical activity, behavioral change, health promotion.

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Background

Hypertension is one of the leading causes of global morbidity and mortality. According to data from the World Health Organization (WHO), more than 1.13 billion individuals worldwide are affected by hypertension, with two-thirds residing in developing countries. Hypertension is responsible for approximately 7.5 million deaths each year, accounting for about 12.8% of total global mortality (1-3).

In Indonesia, the prevalence of hypertension has shown a continuous upward trend. Based on the 2018 National Basic Health Research (Riskesdas), the prevalence of hypertension among individuals aged ≥ 18 years reached 34.1%, increasing from 25.8% in 2013 (4). Hypertension is a major risk factor for various cardiovascular diseases and contributes significantly to the economic and social burden on both individuals and the national healthcare system.

At the regional level, Banten Province faces similar challenges. The 2018 Riskesdas reported that the prevalence of hypertension in Banten was 31.4%, slightly lower than the national figure. However, this still indicates that one in three adults in the province

is at risk of developing hypertension (4-5). This is particularly concerning in urban and semi-urban areas, where the increasing trend is strongly associated with high-sodium diets, lack of physical activity, stress, and other unhealthy lifestyle behaviors.

The risk factors for hypertension are generally categorized into modifiable and non-modifiable factors. Modifiable risk factors include high sodium intake, insufficient physical activity, stress, and smoking, while non-modifiable factors include age, gender, and family history (6-7). Consequently, promotive and preventive interventions are crucial to reduce the incidence of hypertension on a broader scale.

Health education is a proven strategy to improve community literacy regarding the risk factors and prevention of hypertension. Interactive education using media such as leaflets, posters, and visual aids has been shown to enhance public understanding and motivation to adopt healthy behaviors (8). Moreover, the involvement of local health cadres serves as an effective bridge in delivering health messages due to their social proximity and familiarity with community characteristics (9).

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In addition to education, physical activity such as group exercise is highly recommended in hypertension management. Regular exercise has been demonstrated to significantly reduce both systolic and diastolic blood pressure, as well as improve cardiovascular health (10). Therefore, community engagement programs that combine educational sessions with physical activities like group exercise offer a comprehensive and practical approach to promoting healthy lifestyle changes.

Methods

This community service activity was conducted as a promotive and preventive contribution to addressing public health challenges, particularly in preventing and reducing the risk of hypertension through behavioral change interventions aimed at promoting a healthier lifestyle. The target population of this program comprised residents of RT 02/RW 01 in Babakan Subdistrict, Setu District, South Tangerang City, who are members of the Cempaka Community Health Post community health post. A total of 30 participants were involved, consisting of both adults and elderly individuals.

The implementation strategy employed two main approaches: health education and group exercise. The health education session provided information on hypertension, including both modifiable risk factors—such as unhealthy diet, physical inactivity, stress, and smoking—and non-modifiable factors such as age, gender, and family history. This session was delivered interactively using visual media, including leaflets, posters, and short videos, and was supported by local health cadres to facilitate effective communication and community engagement.

Following the education session, participants engaged in a group exercise session led by the implementing team and community health cadres. The exercise routine was specifically adapted to suit the physical capabilities of the participants, serving as a practical introduction to incorporating regular physical activity into daily life.

The activity took place on Sunday, June 8, 2025, starting at 07:00 AM and continuing until completion. The location was Cempaka Community Health Post at RT 02/RW 01, Babakan Subdistrict. Both the time and venue were selected to ensure participants' comfort and to encourage maximum participation, particularly from the elderly.

Throughout the activity, observational data were collected to monitor participants' engagement, and brief reflective discussions were conducted to reinforce the key messages delivered during the session. The overall objective of this initiative was to promote sustainable health behavior change in the community, focusing on hypertension prevention through education and lifestyle modification.

Results and Discussion

This community engagement initiative implemented two primary intervention strategies aimed at reducing the prevalence of hypertension: health education through the CERIA program and a physical intervention via the Anti-Hypertension Exercise program.

The CERIA program, an Indonesian acronym, stands for *Cegah konsumsi garam berlebih* (Reduce excessive salt intake), *Eits!*

jangan lupa minum obat (Do not forget to take your medication), *Rutinkan kontrol tekanan darah* (Regularly monitor blood pressure), *Ingat kendalikan stres* (Manage stress), and *Ayo olahraga dan jangan merokok* (Exercise and avoid smoking). This locally tailored program was designed to complement the national “CERDIK” initiative from the Indonesian Ministry of Health, which emphasizes the importance of early detection and control of non-communicable disease (NCD) risk factors, including hypertension. The CERIA program specifically targets the promotion of awareness and preventive behaviors, particularly among older adults in the Babakan Subdistrict (11-12).

The initial phase of the program involved a health education session intended to improve participants' understanding of hypertension, including its definition, complications, and both modifiable (e.g., diet, physical inactivity, smoking, and stress) and non-modifiable (e.g., age, sex, and family history) risk factors. The session employed interactive methods such as lectures, group discussions, and visual aids (leaflets, posters, and videos) to enhance comprehension. Local health cadres from RT 02 actively participated in delivering the content, fostering community collaboration and empowerment.

Evaluation of the intervention showed that most residents of RT 02/RW 01 possessed a basic understanding of hypertension, supported by previous information from nearby health facilities. However, the translation of knowledge into healthy behaviors remained limited. Many residents had not adopted practices such as salt restriction, routine physical activity, or effective stress management. Moreover, awareness of non-modifiable risk factors—especially hereditary predisposition—was insufficient, and routine blood pressure monitoring was rarely practiced (13-14).

The second component of the intervention involved a group exercise session, facilitated by the service team and community health cadres. The aim was to establish regular physical activity as a sustainable strategy for lowering blood pressure and reinforcing healthy lifestyle habits. The exercise program was specifically designed to be suitable for older adults, taking into consideration their physical limitations. In addition to promoting fitness, these sessions also served as social platforms to encourage mutual support in adopting healthier routines.

The integration of health education and physical activity interventions significantly enhanced community engagement and participation. Participants exhibited enthusiasm and active involvement, although some challenges remained, particularly in terms of comprehension among elderly individuals.

A subsequent problem analysis conducted in RT 02/RW 01 revealed that hypertension prevalence was influenced by several interrelated factors. Based on H.L. Bloom's theoretical model, health status is shaped by four primary determinants: lifestyle, environment, genetic predisposition, and healthcare services. In this community, the most dominant contributing factors were lifestyle behaviors, genetic susceptibility, and gender. These findings emphasize the importance of tailored interventions that consider both modifiable and non-modifiable factors (15-16).



Figure 1. Health Education Session



Figure 2. Exercise Session



Figure 3. Leaflets (Front view)



Figure 4. Leaflets rear view

Firstly, lifestyle behaviors emerged as the most prominent contributing factor. Observations revealed that many residents continued to consume high-sodium foods, refrained from engaging in regular physical activity, and lacked consistent blood pressure monitoring. These practices persisted despite residents' basic knowledge of hypertension, reflecting a clear gap between awareness and the adoption of healthy behaviors (2,15).

Secondly, genetic predisposition was identified as another major determinant. Several participants reported a family history of hypertension, which should ideally serve as a warning to adopt early preventive measures. However, limited awareness of hereditary risk was observed, and this did not consistently translate into healthier lifestyle choices, such as adhering to a low-sodium diet, engaging in routine exercise, or managing stress effectively (17).

Thirdly, gender was found to influence hypertension prevalence. Among the program participants, 91% of individuals identified with hypertension were women, while only 19% were men. This pattern is consistent with prior studies, which indicate that postmenopausal women have an increased risk of elevated blood pressure due to hormonal and metabolic changes (18).

These findings underscore the necessity of tailoring health education programs to reflect the sociocultural characteristics of the community. Promoting long-term behavioral change requires not only awareness of both modifiable and non-modifiable risk factors but also a sustained commitment to community-based health promotion and disease prevention strategies (19).

To ensure a lasting impact, the sustainability of the program must be prioritized beyond its initial implementation. Recommended strategies include training local health cadres to serve as facilitators for physical activity, establishing routine weekly exercise sessions at community centers, and distributing educational content through social media platforms or neighborhood messaging groups. Additionally, continuous collaboration with local healthcare providers is essential to support periodic blood pressure screening as part of an integrated community health surveillance system.

The overarching objective is to empower residents to transition from passive recipients of health interventions to active health promoters within their households and communities. By enhancing health literacy, increasing intrinsic motivation, and fostering community engagement, it is possible to cultivate and sustain a culture of healthy living (20).

Healthy lifestyle adoption is often more successful in the presence of peer support systems. Community-driven strategies such as forming wellness support groups, initiating collective health challenges (e.g., "7 Days Without Added Sugar"), and monitoring progress can significantly improve individual adherence to healthy behaviors. Research suggests that social support and accountability are positively correlated with increased engagement in health-promoting practices (21). Therefore, community-based interventions have the potential to shift hypertension prevention from an individual responsibility to a collective public health movement with long-term, population-level benefits (13).

Conclusion

The community service program implemented in RT 02/RW 01 Kelurahan Babakan demonstrated that integrated health education and physical activity interventions can be an effective approach to raise awareness and promote behavior change in preventing hypertension. The CERIA program—developed as a local innovation—complements the national CERDIK initiative and effectively addresses modifiable risk factors through community-based education and empowerment strategies. The inclusion of physical activity through group exercise further reinforced lifestyle changes by encouraging regular movement and social interaction.

The analysis revealed that the incidence of hypertension in the community is predominantly influenced by lifestyle behaviors, genetic predisposition, and gender, particularly among postmenopausal women. Despite a fair level of knowledge among residents, there remains a gap between awareness and healthy behavior implementation. Therefore, community health promotion programs must not only focus on knowledge dissemination but also foster practical and sustainable behavior change.

To ensure continuity and long-term impact, it is essential to develop community-driven initiatives that empower local health cadres, establish regular health routines, and integrate ongoing health education. By fostering active community participation, strengthening local partnerships, and utilizing accessible media, a healthier lifestyle can be collectively adopted and maintained. In this way, hypertension prevention evolves from an individual effort into a collective movement for better public health outcomes.

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