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# GROUP-BASED HEALTH EDUCATION IN IMPROVING HYPERTENSION CONTROL BEHAVIORS IN COMMUNITIES: A SYSTEMATIC REVIEW

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## ABSTRACT

Hypertension is a major risk factor for cardiovascular disease and remains one of the leading causes of death worldwide. Despite the availability of effective treatments, poor medication adherence and inadequate self-management continue to hinder optimal blood pressure control. These challenges highlight the need for innovative, community-based strategies to support patients in managing their condition. One such approach is group-based health education, which facilitates shared learning, peer support, and improved patient engagement. This study aimed to evaluate the effectiveness of group-based health education in improving hypertension control behaviors through a systematic review.This review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The PICO framework included adults with hypertension as the population, group-based health education as the intervention, standard care as the comparison, and hypertension control behaviors as the outcomes. These outcomes included reductions in systolic and diastolic blood pressure (SBP and DBP), medication adherence, self-care practices, and overall blood pressure control. Relevant articles were identified through PubMed, Scopus, and Google Scholar using keywords related to hypertension, group education, and community-based interventions. Studies meeting the inclusion criteria were analyzed descriptively. A total of twelve studies, primarily randomized controlled trials from various regions, were included. The findings consistently demonstrated that group-based education significantly improved blood pressure outcomes, adherence, and self-care behaviors. Overall, group-based health education is an effective and sustainable strategy that can be integrated into primary healthcare to enhance long-term hypertension management and patient outcomes.

Keywords: Group-Based Health Education; Hypertension; Blood Pressure Control; Self-Care Behavior; Community-Based Intervention; Systematic Review.

## INTRODUCTION

Hypertension is a significant public health burden globally and is one of the main risk factors for cardiovascular disease and premature death (Mahyuvi, Oqui, et al., 2026). The Global Burden of Disease analysis shows that the number of adults with high systolic blood pressure (≥140 mm Hg) increased substantially worldwide between 1990 and 2015, with a major impact on mortality and loss of quality of life due to cardiovascular disease and stroke

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(Forouzanfar et al., 2017). The increasing prevalence of hypertension is influenced by a variety of factors including lifestyle changes, urbanization, and low adherence to medication and self-management by patients (Mahyuvi, 2025).

Medication adherence constraints and self-management behaviors are major challenges in blood pressure control. Educational interventions that emphasize patient empowerment and behavior change have been shown to improve understanding, self-care skills, and blood pressure control in hypertensive patients (Ukoha-Kalu et al., 2023). For example, education that focuses on lifestyle management, dietary modifications, independent blood pressure monitoring, and group support can help patients make better and consistent health decisions in their treatment routines (Mahyuvi et al., 2023).

The application of self-management in people with hypertension is expected to improve knowledge, attitudes and treatment behaviors related to hypertension (Irawan et al., 2023). The implementation of self-management can be done through various innovations. Self-management programs can be carried out using a community empowerment approach (Mahyuvi et al., 2024). Community empowerment-based interventions have been shown to be effective in improving the implementation of self-management and quality of life of hypertensive patients (Mahyuvi, 2024).

Community-based *approaches* and *group-based health education are* increasingly seen as potential strategies to improve the effectiveness of hypertension management outside of the clinical setting (Mahyuvi, Fanani, et al., 2026). Evidence from systematic reviews shows that community-based educational and support interventions are associated with positive behavioral changes and meaningful blood pressure reductions, including improvements in medication adherence, hypertension knowledge, and other health behaviors such as diet and physical activity (Xia et al., 2022). Therefore, a synthesis of evidence on the effectiveness of *group-based health education* is needed to explain its clinical impact on hypertension control as well as associated risk behaviors.

## MATERIALS AND METHODS

This research is a systematic review prepared with reference to the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to ensure transparency, consistency, and quality of reporting of research results. The research process is carried out systematically and in a structured manner, starting from the formulation of research questions, the preparation of literature search strategies, the identification and selection of articles, to the synthesis of research results.

This systematic review aims to identify and synthesize scientific evidence related to the effectiveness of group-based health education interventions in improving hypertension control behaviors in the community. This approach is used to obtain a comprehensive picture of the characteristics of group-based educational interventions, participant characteristics, implementation settings (e.g., communities, health centers, or primary services), and their impact on various behavioral indicators of hypertension control. Behavioral indicators analyzed in this review include medication adherence, dietary changes (such as reduced salt consumption), increased physical activity, stress management,

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independent blood pressure monitoring, and other self-management practices that contribute to blood pressure control.

**Source Information**

Literature search is carried out comprehensively through several electronic databases, namely PubMed, Scopus, and Google Scholar to identify articles relevant to the research topic. The search was limited to articles published in the last ten years to ensure that the scientific evidence used is up-to-date and consistent with the development of group-based health education interventions in the control of hypertension in the community.

In addition, the search focused on empirical studies evaluating group-based health education interventions aimed at improving hypertension control behaviors in the community, with the main outcomes being changes in hypertension control behaviors, such as medication adherence, reduced salt consumption, increased physical activity, weight control, blood pressure monitoring, and other healthy lifestyle changes.

**Search strategy**

The literature search strategy in the database was carried out systematically by combining Boolean operators (AND/OR), Medical Subject Headings (MeSH) terms, and relevant free terms. Keywords used include: ("group-based education" OR "group health education" OR "community-based education" OR "health promotion program" OR "group intervention") AND ("hypertension" OR "high blood pressure") AND ("hypertension control" OR "blood pressure control" OR "self-management" OR "treatment adherence" OR "lifestyle modification" OR "health behavior") AND ("community" OR "community setting" OR "primary care" OR "public health setting"). The search strategy is tailored to the characteristics of each database to maximize the sensitivity and specificity of the search results.

**Inclusion and Exclusion criteria**

Articles are included in this systematic review if they meet several inclusion criteria, namely original research articles with quantitative designs such as randomized controlled trials (RCTs), quasi-experimental, experimental studies, or mixed-methods. Included studies should evaluate group-based health education interventions as independent variables, with the primary outcomes being hypertension control behaviors (e.g. medication adherence, low-salt dietary changes, physical activity, stress management, blood pressure monitoring, or other self-management behaviors).

The subjects of the study were individuals with hypertension or populations at risk of hypertension who were in a community setting. Articles are published in English or Indonesian and are available in full-text to ensure the completeness and accuracy of the data extracted.

On the other hand, articles are excluded from the analysis if they use a purely qualitative research design or are included in the categories of narrative review, systematic review, meta-analysis, editorial, letter to editor, case report, proceedings, or non-scientific publications. Articles with purely qualitative designs, reviews (narrative, systematic, and meta-analyses), editorials, letters to the editor, case reports, proceedings, and non-scientific publications are

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excluded because they do not provide primary quantitative data required to objectively assess intervention effectiveness. In addition, secondary studies such as reviews may lead to data duplication, while publications like editorials and case reports generally lack rigorous methodology or generalizability. Therefore, these exclusions aim to ensure the validity, consistency, and overall quality of the systematic review findings. Articles are also excluded if they do not involve group-based educational interventions, do not focus on hypertension, or do not measure the behavioral outcomes of hypertension control.

### Selection process

Articles that pass the initial screening stage are then further evaluated through full-text review. At this stage, an assessment was carried out on the suitability of the research design, the characteristics of the group educational intervention, the method of measuring hypertension control behavior, and the completeness of the data presented. Studies that met all inclusion criteria were then analyzed and data extracted, including the study design, respondent characteristics, types and forms of group-based health education interventions, duration and frequency of interventions, hypertension control behavioral measurement instruments, and main research results. All stages of article selection are presented transparently in the PRISMA flowchart, thus ensuring the reliability of the systematic review process and providing a clear synthesis of scientific evidence regarding the effectiveness of group-based health education in improving hypertension control behaviors in the community.

## RESULTS

Based on Figure 1, the PRISMA flowchart illustrates the systematic article selection process in a systematic review of the effectiveness of group-based health education in improving hypertension control behavior in the community. At the identification stage, a total of 176 articles were successfully identified from three main databases, namely PubMed (n = 41), Scopus (n = 63), and Google Scholar (n = 69). Furthermore, 53 duplicate articles were deleted before the screening process, leaving 123 articles that continued to the screening stage.

At the screening stage, an assessment is carried out based on the title and abstract to assess the suitability for the research objectives. A total of 65 articles were removed because they were not relevant to the research topic, leaving 58 articles to be searched in full text form (reports sought for retrieval = 58). All articles were successfully retrieved (reports not retrieved = 0).

At the eligibility stage, an in-depth assessment was carried out on the suitability of the research design, the characteristics of group-based educational interventions, and the measured hypertension control behavioral outcomes. A total of 46 articles were excluded because they did not meet the inclusion criteria, including because the research design was irrelevant, the intervention was not group-based, or the outcome did not focus on hypertension control behavior. Finally, at the included stage, 11 articles were obtained that met all inclusion criteria and were worthy of analysis in this systematic review. This

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selection process shows that the study was conducted in a systematic, transparent, and in accordance with the PRISMA guidelines, so that the synthesis of evidence produced has a strong methodological basis in explaining the effectiveness of group-based health education in improving hypertension control behavior in the community.

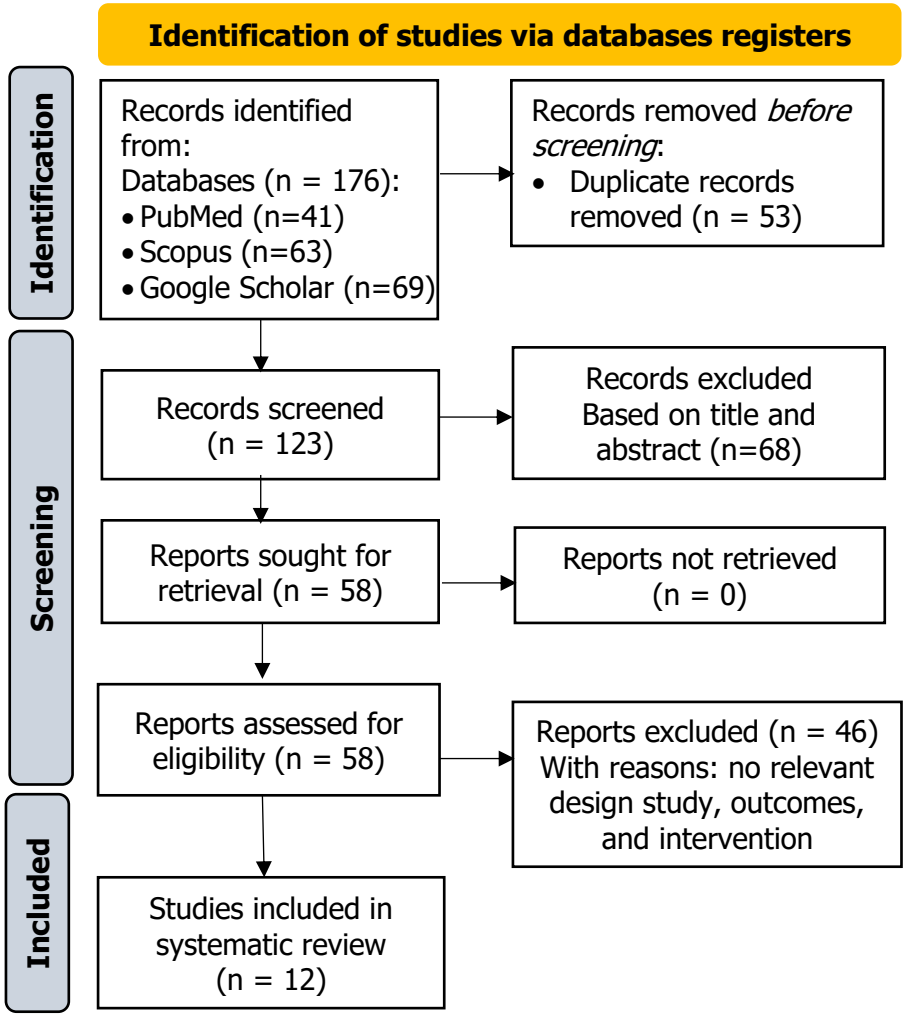


**Figure 1. PRISMA Flowchart on Group-Based Health Education in Improving Hypertension Control Behaviors in Communities**

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**Table 1. Summary of a Primary Study on Group-Based Health Education in Improving Hypertension Control Behaviors in Communities**

| Author (Year) | Country | Study design / Sample size | Population | Intervention | Comparison | Outcome | Results |
|---|---|---|---|---|---|---|---|
| (Abbas et al., 2024) | Egypt | Quasi-experimental (nonrandomized control group pretest–posttest); n = 141 (Intervention = 70, Control = 71) | Adults diagnosed with hypertension attending primary health centers | Health coaching + face-to-face education every 2 months and biweekly phone follow-up for 6 months. Content: HT education, medication adherence, low-salt diet, weight management, physical activity, BP self-monitoring. | Standard care only (routine hypertension management at PHC: counseling, medication prescription/refill, follow-up) | SBP, DBP, self-care (H-SCALE), medication adherence | BP controlled 51.4% vs 11.3% ($p<0.001$); SBP −11.57 mmHg; DBP −6.29 mmHg; improved adherence and self-care. |
| (Gamage et al., 2020) | Sri Lanka | Quasi-experimental study; n = 120 (Intervention = 60, Control = 60) | Community-dwelling adults with hypertension | Community-based structured group education on HT knowledge, diet (salt restriction), physical activity, medication adherence. | Usual care (standard clinic-based hypertension management without structured group education) | SBP, DBP, knowledge, lifestyle adherence | Significant reduction of SBP and DBP ($p<0.05$); Improved knowledge and lifestyle adherence. |
| (Ghammam et al., 2024) | Saudi Arabia | Randomized Controlled Trial (RCT); n = 128 (Intervention = 64, Control = 64) | Adults with diagnosed hypertension in community setting | Structured group education (8 weeks) covering DASH diet, salt reduction, physical activity, medication adherence, self monitoring BP. | Usual care (routine clinical follow-up and standard advice without structured group sessions) | SBP, DBP, knowledge, adherence | Significant BP reduction ($p<0.001$); improved knowledge and adherence; higher BP control rate. |

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| Author (Year) | Country | Study design / Sample size | Population | Intervention | Comparison | Outcome | Results |
|---|---|---|---|---|---|---|---|
| (Hoppe et al., 2023) | Germany | Cluster Randomized Controlled Trial; n = 210 (Intervention = 105, Control = 105) | Adults with hypertension recruited from community practices | Community group education (12 weeks) focusing on CV risk education, self-management, lifestyle modification, medication adherence. | Usual care (standard primary care follow-up without structured group education program) | SBP, DBP, self-management behavior | Significant reduction of SBP and DBP ($p<0.05$); improved self-management; higher BP control. |
| (Jafar et al., 2020) | Pakistan | Cluster Randomized Controlled Trial; n = 1,341 (community clusters) | Community adults with hypertension in rural clusters | Community health worker–led group sessions + home visits; lifestyle modification, adherence counseling, BP monitoring (12 months). | Usual care (standard clinic-based management without structured community group education) | SBP, DBP, BP control rate | Significant reduction in SBP and DBP ($p<0.001$); higher BP control and improved lifestyle adherence. |
| (James, et al., 2024) | United States | Randomized Controlled Trial (RCT); n = 156 (Intervention = 78, Control = 78) | Adults with uncontrolled hypertension receiving primary care | Weekly group-based HT self-management program (10 weeks): DASH diet, sodium reduction, physical activity, medication adherence, home BP monitoring. | Usual care (standard clinical management and routine counseling without structured group sessions) | SBP, DBP, self-care, adherence | Significant BP reduction ($p<0.01$); improved dietary and medication adherence; higher BP control. |
| (Khanal et al., 2021) | Nepal | Cluster Randomized Controlled Trial; n = 1,638 (community clusters) | Adults with hypertension in community clusters (rural setting) | Female community health volunteer–led group education + household visits (12 | Usual care (no structured community-based group | SBP, DBP, awareness, | Significant SBP and DBP reduction ($p<0.001$); increased awareness, |

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| Author (Year) | Country | Study design / Sample size | Population | Intervention | Comparison | Outcome | Results |
|---|---|---|---|---|---|---|---|
| | | | | months): awareness, diet, physical activity, medication adherence, BP monitoring. | education; routine health services only) | treatment and control rate | treatment initiation and BP control. |
| (Kwiringiraw et al., 2024) | Uganda | Pre–post intervention / n=552 (out of 570 hypertension) | Adults ≥18 years old with hypertension in the island community | CHW training, home visits, 2 weekly support groups for 3 months, BP monitoring | Before vs after the intervention | SBP, DBP | SBP decreased significantly (158 mmHg to 149 mmHg); DBP decreased (97 mmHg to 92 mmHg); p<0.001 |
| (Li et al., 2019) | China | RCT clusters/n=450 (224 interventions; 226 controls) | Adults with hypertension in rural areas | Group education, lifestyle counseling, community BP monitoring | Usual care | SBP, DBP, hypertension control | Significant decrease in SBP and DBP in the intervention group; Improved blood pressure control |
| (Long et al., 2020) | Vietnam | Quasi-experimental/n=2,701 (1,315 interventions; 1,386 controls) | Adults 40–69 years old with hypertension | Community programs (SBCC campaign, BP checkpoints, case manager, SMS reminder, BP diary) | Control district (no intervention) | Self-management BP | The intervention improved self-management by 8.5%; significant OR at follow-up |
| (Suseela et al., 2022) | India | Quasi-experimental / n=60 (30 experiments; 30 controls) | Adult community hypertension | Group health education (diet, physical activity, medication adherence) | Before vs after/control | Knowledge, SBP, DBP | Increased knowledge and significant decrease in SBP and DBP (p<0.05) |
| (Upoyo et al., 2024) | Indonesia | RCTs/n=96 (48 interventions; 48 controls) | Adult hypertensive patients | Self-management and community support-based group education | Routine maintenance | SBP, DBP, control behavior | Significant decrease in SBP and DBP and improvement in hypertension control behavior |

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Based on Table 1, this study summarizes 12 primary studies that examine the effectiveness of group-based health education in improving hypertension control and self-management behavior in the community. The studies reviewed came from different countries with varied research designs, dominated by randomized controlled trials (RCTs) and cluster randomized controlled trials, as well as several quasi-experimental and pre-post intervention study designs.

A total of 12 primary studies were reviewed from several continents, namely Asia (n = 8) which included Sri Lanka, Saudi Arabia, Pakistan, Nepal, Vietnam, China, India, and Indonesia; Africa (n = 2) i.e. Egypt and Uganda; Europe (n = 1) i.e. Germany; and North America (n = 1) i.e. the United States. The study population was generally adult patients with hypertension who lived in the community or received services in primary health facilities, with some studies conducted in rural settings and community cluster-based. The study population was generally adult patients with hypertension who lived in the community or received services in primary health facilities, with some studies conducted in rural settings and community cluster-based.

In general, the interventions provided were in the form of structured group education on hypertension knowledge, medication adherence, lifestyle modifications (low-salt diet, DASH diet, physical activity), independent blood pressure monitoring, and support from community health workers (CHWs). Some studies also combined face-to-face education with home visits, SMS reminders, phone monitoring, and the use of blood pressure diaries.

The results of the study consistently show that group-based health education interventions are able to significantly lower systolic blood pressure (SBP) and diastolic blood pressure (DBP) compared to standard care and pre-intervention conditions. In addition, some studies have also reported significant improvements in medication adherence, self-care behaviors, awareness and knowledge of hypertension, and increased blood pressure control rates. Studies based on community health workers and cluster RCTs have even shown a significant impact on population scale on increasing awareness, treatment initiation, and blood pressure control rate.

These findings indicate that a community-based group-based health education approach is an effective and applicable strategy in improving hypertension control. However, there were variations in the duration of the intervention (8 weeks to 12 months), session intensity, delivery methods (face-to-face, home visit, SMS reminder), and outcome measurement instruments, so the interpretation of results needs to consider the context of implementation and the characteristics of the population of each study.

## DISCUSSION

The results of the study summary contained in Table 1 show that Group-based Health Education has a positive effect on hypertension control in the community. Consistently, group educational interventions have been shown to lower systolic and diastolic blood pressure and improve self-management behaviors, including medication adherence and lifestyle modifications. This is in line with evidence from systematic reviews and meta-analyses showing that community-based interventions are effective in lowering blood pressure in hypertensive patients, with an average systolic reduction of about 7.26 mmHg and diastolic of about 2.77 mmHg compared to standard or control (non-interventional) care (Azami-Aghdash et al., 2025).

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Some of the studies in Table 1 used group education strategies that combined interactive sessions, peer support discussions, and strengthening knowledge and self-care skills. These strategies have a strong foundation from previous literature reporting that educational approaches that are interactive in nature are more effective than passive methods in increasing knowledge about hypertension, understanding of the importance of blood pressure control, and health behaviors that support expected clinical targets (McDonagh et al., 2025; Mahyuvi et al., 2023). For example, an intervention conducted in China showed that interactive educational workshops significantly increased hypertension knowledge as well as behavioral changes such as reduced salt intake and increased physical activity, which in turn contributed to a reduced clinical risk of hypertension complications (Lu et al., 2015). Another intervention conducted in Indonesia showed that patients' knowledge of hypertension increased after being given health education through lectures and discussions (Mahyuvi et al., 2025). In addition, health education using booklet media has also been shown to improve knowledge among pregnant women with hypertension (Isnaeni et al., 2024).

A cross-sectional study was conducted in Timor Leste by (Pires et al, 2022) indicates that stress levels are the main risk factors for hypertension recurrence; When patients experience stress, the risk of recurrence increases and can lead to further complications, such as strokes (Mahyuvi et al., 2026), considering that hypertension is a dangerous disease that can cause death and is often referred to as the "silent killer" because it often does not cause obvious symptoms, so comprehensive hypertension control is needed along with effective stress management to prevent recurrence and reduce the risk of complications (Mahyuvi et al., 2022).

In addition, evidence from cluster RCT studies in Nepal reinforces the findings of Table 1, where the combination of group education sessions with home visits by community health workers significantly increased the proportion of patients with good systolic control compared to the control group receiving only standard care (Khanal et al., 2021). These findings underscore the importance of the role of health workers as educational facilitators as well as self-management facilitators in the community, especially in populations with poor blood pressure control. Overall, the evidence synthesized from 12 primary studies suggests that group-based health education is an effective community-based intervention to improve hypertension control and health behaviors related to blood pressure outcomes.

## CONCLUSION

This systematic review study concluded that group-based health education is effective in improving hypertension control in the community. A synthesis of 12 primary studies showed that group educational interventions consistently lowered systolic and diastolic blood pressure, as well as improved medication adherence, self-care behaviors, and blood pressure control scores compared to standard care. With the support of robust research designs such as RCTs and cluster RCTs, this approach has the potential to be integrated in primary healthcare as an effective and sustainable strategy in hypertension control.

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