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# EDUCATIONAL AND SUPPORT GROUP INTERVENTIONS TO IMPROVE ADHERENCE IN HYPERTENSIVE PATIENTS: A SYSTEMATIC REVIEW

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**Abstrak**

Hypertension is a chronic condition frequently associated with poor treatment adherence, emphasizing the importance of self-care–based intervention strategies. This systematic review aims to assess the effectiveness of educational and support group interventions rooted in self-care theory in enhancing adherence and controlling blood pressure among individuals with hypertension. The review followed the PRISMA 2020 guidelines, with articles retrieved from seven databases (Scopus, PubMed, ProQuest, ScienceDirect, SAGE Journals, Springer Nature, and Cochrane Library) published between January 2020 and December 2025. Eligible studies were randomized controlled trials (RCTs) that evaluated the impact of education or support interventions on adherence and blood pressure outcomes. Methodological quality was assessed using the JBI Critical Appraisal Checklist. Out of 320 identified articles, 9 RCTs met the inclusion criteria, conducted in Indonesia, Iran, Egypt, China, and Turkey, involving a total of 1,011 participants aged 60–74 years. The interventions included structured education sessions, self-directed modules based on self-care theory, group discussions, and peer support activities. Most studies reported improvements in medication adherence and healthy lifestyle behaviors, along with significant reductions in both systolic and diastolic blood pressure. Self-care–based interventions were found effective in increasing patient engagement in hypertension management. However, the diversity in intervention formats and durations highlights the need for standardization. These strategies are feasible for implementation in both community and primary care settings.

**Kata Kunci:** *Adherence; Education; Hypertension; Support Group; Systematic Review.*



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## INTRODUCTION

Hypertension is a leading chronic disease and a major cause of death worldwide, including in Indonesia. It is often referred to as a *silent killer* because it typically presents without symptoms but can lead to severe complications such as stroke, kidney failure, and heart disease if not properly controlled (Mailita and Suci 2025). According to the World Health Organization (WHO, 2025), more than 1.3 billion people are affected by hypertension globally, with nearly two-thirds living in low- and middle-income countries. In Indonesia, the prevalence continues to rise, particularly among the elderly, contributing substantially to national morbidity and mortality as reported in the Indonesian Health Survey (Kemenkes RI, 2024).

The elderly are the most vulnerable population to hypertension because they experience physiological changes such as reduced vascular elasticity, metabolic disorders, and declining organ function. Hypertension can be managed through healthy lifestyle practices, including regular physical activity, a low-salt diet, medication adherence, and stress management (Pramudaningsih, Rofiah and Nisa, 2024; Zethira *et al.*, 2024). The (AHA, 2022), recommends engaging in at least 150 minutes of moderate physical activity per week, maintaining a balanced diet rich in fruits, vegetables, and whole grains, and limiting salt, sugar, and alcohol intake while avoiding tobacco use. However, adherence to these healthy lifestyle recommendations among the elderly remains low due to physical limitations, lack of motivation, and limited understanding of hypertension management (Buawangpong *et al.*, 2020).

Based on data from World health organization (WHO 2021), the incidence of hypertension in adults up to the elderly aged 30-79 years worldwide reaches 1.28 billion people and an estimated 46% of adults with hypertension do not realize that they have hypertension in Indonesia, according to the Basic Health Research (Riskesdas, 2018), the prevalence of hypertension in the elderly is quite high, namely 45.6% (age 55-64 years), 58.9% (age 65-74 years), and increased to 62.6% at age ≥75 years. The latest data from the Indonesian Health Survey (Kemenkes RI, 2024), shows an increase in prevalence in this age group. Based on the results of blood pressure measurements, the prevalence of hypertension reached 49.5% at age 55-64 years, 58.1% at age 65-74 years, and increased to 64.0% at age ≥75 years. According to the 2018 Indonesia Basic Health Research data, hypertension among the elderly shows a continuing upward trend, highlighting the urgency of tailored health strategies for the aging population. In Indonesia, the low level of health awareness causes many patients to be unaware of their hypertension condition and tend not to follow the recommended treatment. This change in trend may be influenced by increased knowledge about health services and treatment, as well as changes in socioeconomic conditions that affect the culture and lifestyle of Indonesians (Arifin, Yudha and Haryanto, 2024).

In response to the growing burden of hypertension, various global organizations have set measurable control targets. The WHO and various international associations such as the AHA and the World Hypertension League emphasize the importance of improving early detection, risk- based management of hypertension, and achieving blood pressure targets of <130/80 mmHg in the general population, and <120 mmHg for high-risk groups. In addition, improved medication adherence and lifestyle modifications are important indicators in reducing the global burden of cardiovascular disease. If left untreated, hypertension can lead to serious complications such as stroke, kidney failure, heart attack, and even sudden death, as well as increase the economic

burden due to medical costs and long-term productivity loss. (Guan *et al.*, 2020).

Patient adherence to treatment and a healthy lifestyle is one of the main determinants of successful hypertension control. Unfortunately, this level of compliance is still relatively low (Nursalam *et al.*, 2020). Several factors that influence patient non-compliance include the length of therapy, ineffective communication between patients and health workers, lack of information, concerns about drug side effects, limited costs, and the patient's psychological condition (Leny Nopitasari *et al.*, 2019). This non-compliance has an impact on uncontrolled blood pressure (Buawangpong *et al.*, 2020). In this context, health education is one of the important efforts to improve patient compliance through increasing understanding and awareness of the importance of self-care. Education provided on an ongoing basis can increase knowledge, shape preventive behavior, and strengthen patient commitment to carrying out therapy. Furthermore, social support or support systems, such as family involvement, peer groups, or accompanying health workers, play a major role in encouraging patients to remain adherent to treatment and lifestyle modifications (Zethira *et al.*, 2024). Therefore, interventions that combine education and social support are strategic approaches that have the potential to be effective in reducing hypertension rates in the community.

Various forms of education and social support have been widely applied as a strategy to improve hypertension patient adherence, ranging

from direct health education, individual counseling, to the use of digital media as a means of education. However, their effectiveness still varies depending on the method, intensity, and context of the intervention. Many studies have reported that passive education without emotional and social support does not have a significant impact on long- term behavioral changes in medicine (Ni Komang Vera Vidianti, Ni Putu Aryati Suryaningsih and Dewa Ayu Putu Satrya Dewi, 2023). Therefore, a more participatory and supportive approach has emerged, one of which is through *peer group support*. This support allows patients to share experiences, strengthen motivation, and create a sense of community in managing hypertension (Upoyo *et al.*, 2024)

Within a nursing framework, the application of a self-care theory-based approach developed by Orem is considered relevant because it emphasizes the empowerment of individuals in caring for themselves, especially in chronic conditions such as hypertension. Self-care management includes understanding of care instructions, skills in controlling symptoms, and the ability to make decisions that support health. However, facts in the field show that many hypertensive patients do not have adequate understanding and self-care skills, which has an impact on low compliance and high risk of complications (Widyastuti *et al.*, 2025) ; (Mi'mah et al., 2023). Increased education based on self-care theory combined with peer support is believed to increase the effectiveness of hypertension self- management. This approach not only provides information but also strengthens the psychosocial aspects and motivation of patients in maintaining adherence to therapy and a healthy lifestyle. Therefore, to systematically assess the effectiveness of these interventions, this study was conducted in the form of a systematic review. The aim of this review was to answer the following research questions: (1) What is the effect of educational interventions and support groups based on self-care theory on lifestyle adherence in hypertensive patients? (2) What is the effect of these interventions on blood pressure control?

## METHOD

Study Design

This study employed a systematic review design to synthesize empirical evidence on the effects of educational and support group interventions based on self-care theory on medication adherence and blood pressure control in hypertensive patients. The review process followed the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The protocol for this systematic review has been registered and can be accessed through the International Prospective Register of Systematic Reviews (PROSPERO) with number 1076114 (https://www.crd.york.ac.uk/prospero/).

| | **Inclusion** | **Exclusion** |
|---|---|---|
| **Participants** | Patients with hypertension aged ≥60 years | |
| **Intervention** | Intervention in the form of education and support group based on self-care theory | |
| **Comparison** | Compared to standard care | |
| Outcome | With primary outcomes | |
| **Study Designs** | Randomized controlled trial | Qualitative studies, Abstract only, Case series, case reports, reviews, Discussion papers |
| | English-language articles published between 2020 and 2024 | Unavailable full-text articles |

The inclusion criteria were as follows: (a) studies evaluating the effects of self-care theory–based educational and support group interventions among hypertensive patients; (b) studies measuring
outcomes related to adherence behaviors (diet, physical activity, smoking cessation, medication adherence) and/or blood pressure control; (c) quantitative studies employing a randomized controlled trial (RCT) design; (d) studies involving adults aged ≥60 years with a confirmed hypertension diagnosis; and (e) full-text English-language articles published between 2020 and 2024 in peer-reviewed journals. Exclusion criteria were as follows: (a) studies using interventions not based on self-care theory or without educational/support components; (b) studies evaluating outcomes unrelated to adherence or blood pressure control;
(c) qualitative designs, case reports, or case series;
(d) non-English articles; and (e) non-research publications such as reviews, editorials, opinion papers, or conference abstracts.

**Procedure**

**Study Selection and Data Extraction** The study selection process was systematic to ensure the selected literature was relevant and met appropriate methodological standards. Articles

were collected from seven major databases (Scopus, PubMed, ProQuest, ScienceDirect, Sage Journal, Springer Nature Link, and Cochrane Library), with a focus on English-language publications published between January 2020 and December 2024. The search strategy used a combination of MeSH terms and free keywords constructed with Boolean operators, including terms such as "hypertension", "self-care theory", "education", "support group", and "adherence", and was limited to studies with a randomized controlled trial (RCT) design. Articles were screened in two stages: title and abstract review, followed by full-text review according to inclusion and exclusion criteria. The entire selection process was reported transparently using the PRISMA 2020 flowchart.

All articles found were managed using Mendeley, and duplicate entries were automatically removed prior to the screening process. This step
was important to ensure the validity of the literature used and minimize the risk of bias in study selection. The selection process was systematic and structured to ensure that only studies that were relevant and of good methodological quality were included. All articles obtained were imported into Mendeley for reference management and duplicate removal. Two authors (KM) and (EM) independently conducted an initial screening process of the titles and abstracts of all articles found based on predefined inclusion and exclusion criteria. After that, further screening was done by reviewing the full text of the articles that passed the initial stage. In case of disagreement during the screening process, it was resolved through discussion and mutual agreement with the third reviewer, (M), to ensure objectivity and reduce selection bias. After the final selection process, two authors (KM) and (EM) also independently extracted key data from the selected studies using a standardized data extraction form from the Joanna Briggs Institute (JBI). Extracted data included author name, year of publication, country, study design, intervention setting, participant characteristics, intervention details (including forms of support and education based on self-care theory), and key outcomes related to adherence and blood pressure.

Study Bias Risk Assessment

The risk of bias in the studies included in this systematic review was independently assessed by researchers using the JBI Critical Appraisal Checklist for Randomized Controlled Trials (RCTs). This tool consists of 13 items designed to evaluate the methodological quality of studies, specifically in terms of internal validity and statistical conclusion validity. The assessment covers several key domains, such as: Randomization and allocation concealment, Balance of baseline characteristics between groups, blinding of participants and intervention providers, Consistency in intervention delivery, Reliability and uniformity in outcome measurement, Handling of missing data (dropouts), Application of the intention-to-treat principle, and Appropriate use of statistical analysis. Each study was scored based on the information available, with responses classified as "Yes," "No," "Unclear," or "Not Applicable." A study was considered to have a high risk of bias if the majority of its indicators were rated "No" or "Unclear."

Data Analysis (Data Synthesis)

Data extracted from each article that met the inclusion criteria were systematically organized into a synthesis table. Information collected included: author name, year of publication, country of study, research design, sample characteristics, form of self-care theory-based intervention, duration of intervention, variables measured (lifestyle adherence and blood pressure), and key findings from each study. Analysis was conducted using a structured narrative approach, grouping studies based on similarities in design and intervention focus. The themes that emerged from the data were then classified into two main foci, namely: Improved adherence to lifestyle and medication, and Impact of the intervention on blood pressure reduction.

## RESULT AND DISCUSSION

Result

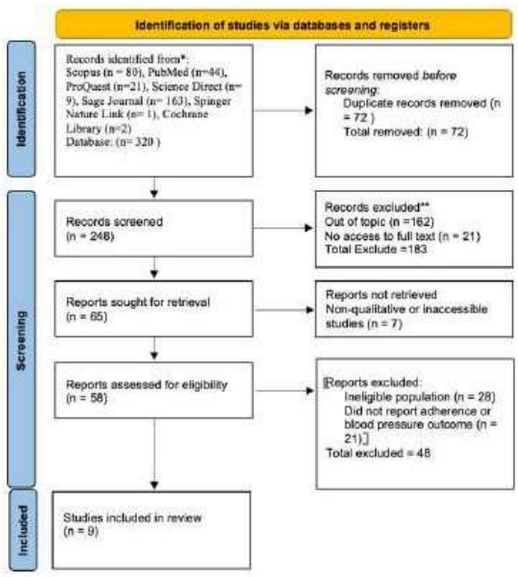
The study selection process is carried out systematically based on PRISMA 2020 guidelines. **Study Selection**

Articles were identified from seven major databases, namely: Scopus (n = 80), PubMed (n = 44), ProQuest (n = 21), ScienceDirect (n
= 9), Sage Journal (n = 163), Springer Nature Link (n = 1), and Cochrane Library (n = 2), with a total of 320 articles. After removing 72, a total of 248 articles were screened by title and abstract. Of these, 162 articles were excluded because they were not relevant to the topic, and 21 articles did not have full-text access, leaving 65 articles to be further screened. A total of 7 articles were inaccessible or were non- quantitative studies and were excluded from the review, leaving 35 articles for full-text review. Of these 58 articles, 28 articles were excluded due to unsuitable populations, 20 articles did not report relevant outcomes (adherence or blood pressure), resulting in a final number of articles included in the review of 9 studies.

After a systematic selection process, nine randomized controlled trials (RCTs) were

included in this review. These studies assessed the effectiveness of educational interventions and support groups grounded in self-care theory on treatment adherence and blood pressure control among patients with hypertension. Most interventions were delivered in primary care or community settings and primarily targeted older adults with a hypertension diagnosis. The interventions commonly combined face-to-face education, self-care–based modules, self-management training, and peer support groups, with durations ranging from 4 weeks to 6 months. The primary outcomes measured were adherence to both pharmacologic and non-pharmacologic therapy and changes in systolic and diastolic blood pressure. The majority of studies demonstrated positive effects, with self-care theory based interventions showing greater consistency in promoting behavioral change and blood pressure reduction. Nonetheless, detailed implementation strategies were often lacking, and only a few studies included long-term follow-up. In addition, reference list screening was not conducted, raising the possibility that relevant studies may have been missed.

The flowchart of the study selection process is




shown in the PRISMA Flow Diagram (Figure 1).

Figure 1. PRISMA Flow Diagram.

Characteristics of Included Studies

The nine randomized controlled trial (RCT) studies included in this review were conducted in various countries, including Indonesia, Iran, Egypt, China, and Turkey, with the largest number found in Iran, which accounted for three studies, the majority of which were conducted in primary healthcare settings such as Public Health Center (PHC) community clinics, and hospital polyclinics. All studies targeted elderly hypertensive patients, with participants ranging in age from 60 to 74 years. Interventions included a combination of self-care theory-based education and support groups, with a variety of media and frequencies-such as face-to-face, telehealth, home visits, or involvement of family members. The duration of the intervention ranged from 4 to 12 weeks. All studies evaluate the impact on medication adherence and healthy lifestyle as well as changes in systolic and diastolic blood pressure. The earliest study was published in 2020 and the latest in 2025 2022 was the year of the most published studies, with four articles out of a total of nine. This trend reflects the increasing attention to self- empowerment-based educational approaches in the management of hypertension.

Quality Appraisal

The results of this quality assessment were not used as a basis for excluding studies but were used as an important consideration in the process of interpreting and synthesizing the findings, to ensure the credibility and accuracy of the overall review.

Summary of Study Quality. The assessment was conducted using the Joanna Briggs Institute (JBI) Critical Appraisal Tool for Randomized Controlled Trials (RCTs) studies.

Tabel 1 Summary of Study Quality. The assessment was conducted using the Joanna Briggs Institute (JBI) Critical Appraisal Tool for Randomized Controlled Trials (RCTs) studies.

| No. | Study | Study Design | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | (Kurt and Gurdogan 2022) | RCT | Y | U | Y | N | N | N | U | Y | Y | Y | U | Y | Y | 61,5 % |
| 2 | (Erden et al.2025) | RCT | Y | U | Y | N | N | N | Y | Y | Y | Y | U | Y | Y | 69,2 % |
| 3 | (Widyastuti et al. 2025) | RCT | Y | Y | Y | N | N | N | Y | Y | Y | Y | U | Y | Y | 69,2 % |
| 4 | (Kordvarkaneet al. 2023) | RCT | Y | U | Y | N | N | N | Y | Y | Y | Y | U | Y | Y | 61,5 % |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | (Hazrati Gonbad et al. 2022) | RCT | Y | U | Y | N | N | N | U | Y | Y | Y | U | Y | Y | 61,5 % |
| 6 | es and Bezerra 2022) | T | Y | Y | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | 85% |
| 7 | (Delavar, Pasha Teypoor, and Negarandeh 2020) | RCT | Y | Y | Y | N | N | N | U | Y | Y | Y | U | Y | Y | 69,2 % |
| 8 | (Ma, Cheng, Janet W.H. Sit, *et al.*, 2022 a) | RCT | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | 100 % |
| 9 | (Liu *et al.*, 2017) | RCT | Y | Y | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | 85 % |

(Barker et al. 2023)

Article quality assessment was conducted using the JBI Critical Appraisal Checklist for RCTs to evaluate the risk of bias in each included study. Articles that scored ≤50% were considered to have a high risk of bias, scores of 51-74% were considered moderate risk of bias, and scores ≥75% were considered low risk of bias. These thresholds are interpretive and are used to give an idea of the level of quality of the research methodology. However, it is important to note that these thresholds are not absolute and can be adjusted according to the study context and analysis needs. Results of Individual Studies

**Effectiveness of Educational Intervention and Support Group Based on Self-Care Theory**

This systematic review included 10 randomized controlled trial (RCT) studies published between 2020 and 2024, which evaluated the effectiveness of educational and support group interventions based on Dorothea Orem's Self-care theory in hypertensive patients aged ≥60 years. Overall, the intervention showed a positive impact on two main outcomes, namely: (1) improved adherence to healthy lifestyle and medication, and (2) reduced systolic and diastolic blood pressure (Ma, Cheng, Janet W H Sit, *et al.*, 2022; Jamil Alkuwaisi *et al.*, 2024).

Improved Lifestyle and Medication Adherence

Nine studies patient adherence following the intervention (Delavar, 2020) ; (Gonbad *et al.*, 2022) ; (Kordvarkane *et al.*, 2023) ; (Kurt and Gurdogan, 2022) ; (Moraes and Bezerra, 2022) ; (Widyastuti *et al.*, 2025) ; (Erden *et al.*, 2025) ; (Ma, et al., 2022) ; (Liu et al., 2023).

These studies reported a significant increase in adherence levels after participants received the interventions. The improvement was measured using standardized instruments such as the Morisky Medication Adherence Scale (MMAS-8), lifestyle adherence checklists, and daily behavior logs. Patients who participated in structured education sessions and group support programs showed significantly higher adherence to a low-salt diet, regular exercise, smoking cessation, and medication routines compared with control groups that received only standard care (Ma, et al., 2022). For instance, studies from Iran, China, and Indonesia demonstrated improvements in adherence scores from “low” to “medium” or “high” within 6 to 12 weeks of intervention. These findings emphasize the crucial role of theory-based education combined with social support in promoting sustainable behavioral change among elderly patients with hypertension.

Blood Pressure Decrease

Eight studies (Delavar, 2020) ; (Gonbad *et al.*, 2022) ; (Kordvarkane *et al.*, 2023) ; (Kurt and Gurdogan, 2022) ; (Moraes and Bezerra, 2022) ; (Widyastuti *et al.*, 2025) ; (Erden *et al.*, 2025) ; (Ma, et al., 2022) reported significant reductions in systolic and diastolic blood pressure after the intervention. The average reduction in systolic blood pressure ranged from 8-15 mmHg, and diastolic between 4-10 mmHg. These reductions were sustained for up to three months in studies with longer follow-up. Interventions that combined education and weekly support group sessions showed more consistent results than education alone (Ma, et al., 2022). For example, a Chinese study noted a reduction in systolic blood pressure by 11.07 mmHg and diastolic by 7.5 mmHg in the intervention group compared to controls at week 12 (Ma, et al., 2022).

**Empowerment and Self-Efficacy as Mediators**

A total of six studies (Widyastuti *et al.*, 2025) ; (Kordvarkane *et al.*, 2023) ; (Delavar, 2020) ; (Gonbad *et al.*, 2022) ; (Kurt and Gurdogan, 2022) ; identified patient empowerment and increased self-efficacy as mediating factors for intervention success. These effects were measured through self-care confidence scales and interviews with participants. Patients reported feeling more confident in managing their condition, making appropriate decisions, and consistently practicing self-care (Shamsizadeh *et al.*, 2021; Jamil Alkuwaisi *et al.*, 2024). Peer group support and structured education were factors that participants frequently mentioned as key drivers.

**Synthesis result**

This systematic review shows that self-care theory-based educational and support group interventions consistently have a positive impact on healthy lifestyle adherence and blood pressure control in elderly hypertensive patients. Of the ten studies analyzed, the majority reported significant improvements in adherence to medication, low-salt diet, and physical activity following structured education and support group-based interventions (Delavar, Pashaeypoor and Negarandeh, 2020b; Moraes and Bezerra, 2022). Most studies also recorded reductions in systolic and diastolic blood pressure in the range of 8-15 mmHg for systolic and 4-10 mmHg for diastolic, indicating that lifestyle modification through an educational approach has clinically relevant effects (Kurt and Gurdogan, 2022b; Ma, Cheng, Janet W.H. Sit, et al., 2022; Liu et al., 2023b). These effects are amplified through social support, whether in the form of peer support, group education, or monitoring through digital-based applications (Ma, Cheng, Janet W.H. Sit, *et al.*, 2022b; Jamil Alkuwaisi *et al.*, 2024). The pattern of association between increased self-efficacy and improved clinical outcomes appears consistent across studies, with participants who feel more confident in managing their health showing better adherence and more optimal blood pressure outcomes (Hazrati Gonbad *et al.*, 2021; Moraes and Bezerra, 2022b). Thus, self-care theory-based interventions offer a multifactorial approach that integrates cognitive, behavioral, and social aspects together in hypertension control efforts.

**Discussion**

This systematic review synthesized evidence from ten randomized controlled trials (RCTs) examining the effectiveness of self- care theory–based educational and support group interventions among elderly patients with hypertension. Overall, the findings indicate that such interventions improve medication adherence, promote healthier lifestyle behaviors, and reduce both systolic and diastolic blood pressure (Delavar, 2020; Hazrati Gonbad et al., 2021; Kurt and Gurdogan, 2022; Ma, Cheng, Janet W H Sit, et al., 2022; Moraes and Bezerra, 2022).

However, the methodological rigor and implementation strategies varied considerably across studies. Several RCTs involved small sample sizes ($n < 100$) and short intervention durations (4–8 weeks), limiting the strength and generalizability of the findings (Delavar, 2020) ; (Gonbad *et al.*, 2022). Moreover, blinding and allocation concealment were rarely reported, which may have introduced performance and detection bias, potentially inflating the observed intervention effects. While most studies demonstrated significant improvements, inconsistent measurement tools such as different adherence scales and self-developed questionnaires—further complicated cross-study comparisons.

Another methodological gap lies in the variation of intervention providers. Most interventions were delivered by nurses or trained health educators, highlighting the critical role of nursing in chronic disease self- management (Moraes and Bezerra, 2022a) ; (Kurt and Gurdogan, 2022a). However, some studies did not specify who administered the intervention, raising concerns about fidelity and replicability. Additionally, only a few RCTs included follow-up periods beyond three months, limiting evidence on the long-term sustainability of improved adherence and blood pressure control.

Despite these limitations, the studies consistently highlight that combining structured education with peer or family support enhances intervention effectiveness by fostering motivation, accountability, and shared learning (Gonbad *et al.*, 2022) ; (Moraes and Bezerra, 2022). These effects appear to be mediated by improved self-efficacy and patient empowerment, which encourage greater self- regulation in daily hypertension management (Kurt and Gurdogan, 2022a) ; (Ma, et al., 2022a). Nonetheless, the variability in intervention duration and intensity suggests that continuous engagement and culturally tailored strategies may be essential for sustained outcomes.

Future research should therefore employ larger, multicenter RCTs with clear intervention protocols, standardized measurement instruments, and extended follow-up durations to strengthen the evidence base. Overall, while the reviewed studies demonstrate promising results, the heterogeneity in design and delivery highlights the need for greater methodological consistency before these interventions can be widely implemented in hypertension management programs. While most RCTs demonstrated positive outcomes, differences in measurement instruments (e.g., Morisky Medication

**LIMITATIONS**

This systematic review has several limitations. First, only peer-reviewed journal articles were included, which may have led to publication bias by excluding grey literature such as theses, dissertations, and conference proceedings. The absence of reference list screening further increases the risk of missing relevant studies not indexed in major electronic databases. Second, although the search strategy was designed to capture randomized controlled

trials (RCTs), studies with quasi- experimental designs or alternative terminology may have been overlooked. Third, restricting inclusion to English-language publications may have excluded potentially relevant evidence from non-English sources. Fourth, while the review focused on adherence and blood pressure outcomes, some studies reported only one of these outcomes or used non-standardized instruments, thereby limiting comparability across studies. Study quality was appraised using the JBI Critical Appraisal Checklist for RCTs, with scores ≤50% considered high risk of bias, 51–74% moderate risk, and ≥75% low risk. These thresholds are interpretive and adaptable to context; articles with lower scores were retained but their limitations were explicitly discussed to clarify the potential impact of bias on the findings.

## CONCLUSION

This systematic review aimed to evaluate the effectiveness of self-care theory–based educational and support group interventions on medication adherence and blood pressure control among hypertensive patients. The review provides strong evidence that these interventions significantly improve adherence to antihypertensive therapy, promote healthy lifestyle behaviors, and lead to meaningful reductions in both systolic and diastolic blood pressure. From a practical standpoint, the findings emphasize the essential role of nurses and community health workers in delivering structured, theory-based education and peer-support programs to empower elderly patients in managing hypertension. Implementing such approaches in primary care and community settings may enhance patient autonomy and long-term disease control. Future research should employ large-scale, multicenter RCTs with longer follow- up periods and standardized outcome measures to evaluate the sustainability, cost-effectiveness, and cross-cultural applicability of self-care–based interventions in diverse healthcare systems.

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Appendix 1
Table 2. Outcome of extracted data

| Author, Year | Settings, Context Related Information | Duration/Year of Data Collection | Method, Study Type | Intervention | Participant Characteristics | Phenomenon of Interest/Research Objective |
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| Erden, Y., Yıldız, G. N., Çiftçi, B., Avşar, G., Özek, S., Özbek, E., & Sarıalioğlu, (2025) | The study was conducted at the Cardiology outpatient clinic, Van Region Training and Research Hospital, Turkey, with a focus on hypertensive patients. | September December 2022 | RCT with pre-test-post-test design with two groups (intervention and control), using statistical analysis including t-test and ANOVA. | The tele-nursing-based self-management program used the Roper-Logan-Tierney model. The program includes hypertension education with a guidebook and telephone consultation sessions twice a week for 12 weeks. | 60 hypertensive patients aged ≥30 years who had been diagnosed with essential hypertension for at least 6 months, were taking antihypertensive medication, and had access to technological devices such as smartphones or computers. | Assess the effectiveness of a tele-nursing-supported self-management program based on the Roper-Logan-Tierney model in improving self-management, medication adherence, and hypertension management patients. |
| Widyastuti, C. S., Dinarti, L. Aulawi, K., Lazuardi, (2025) | The study was conducted in Yogyakarta, Indonesia, involving | October 2023 - April 2024 | RCT with single-blind evaluator design, comparing | The mHealth-based MaRiTensi app for hypertension | 108 participants (54 intervention, 54 control), aged 18-60 years, with hypertension | Assess the effectiveness MaRiTensi application improving |

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| | | | two groups (intervention and control), using Repeated Measures ANOVA and t-test statistical analysis. | management. The app provides blood pressure tracking, weight, physical activity, BMI, medication reminders, diagnostic test results, educational materials, and access to medical consultation. Duration of intervention: 12 weeks, with self-directed use of the app by participants. | ≥140/90 mmHg, owning a smart phone, and willing to participate. Exclusion: severe medical conditions (diabetes, renal failure, etc) and difficulty using the app. | knowledge, motivation, self-efficacy, self-care, and controlling blood pressure in hypertensive patients. Secondary objectives include differences systolic and diastolic blood pressure between intervention and control groups. |
| Kurt, D. & Gurdogan, E. P. (2022) | The study was conducted in the outpatient polyclinics of internal medicine and cardiology at | July 2017 - August 2018 | RCT with pre-post-test approach in two groups (intervention and control), with blood | Self-management support included one-session (60-90 minutes) education on | 137 hypertensive patients (69 intervention, 68 control), aged 18-65 years, currently taking antihypertensive | Assess the effects of self-management support hypertension knowledge, medication |

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| | a secondary care hospital in Edirne Province, Turkey. | pressure measurements as well as scales of knowledge, compliance, and self-management | hypertension, blood pressure measurement techniques, healthy lifestyle management (diet, stress, physical activity), and provision of an information booklet. The intervention was conducted one week after the initial interview and lasted for 3 months. | drugs, able to communicate, and having an upper arm blood pressure monitor. The majority had primary- secondary education, with a diagnosis of hypertension > 1 year. | adherence, self-management, and changes in systolic and diastolic blood pressure hypertensive patients. |
| Kordvarkane, Oshvandi, Mohammadi, & Azizi (2023) | The study was conducted at the heart clinic of Farshchian Hospital, Hamadan, Iran | April 2021 - March 2022 RCT with pre-post design between two groups, using t-test analysis and chi-square test. | Education based on the Common-Sense Model of Self-Regulation (CSM) for 5 individualized face-to-face sessions (30-45 minutes each, every 6 days), plus telephone | 72 patients with primary hypertension, aged 40-65 years, able to read/write, without acute disorders. There were 36 participants in the intervention group and 36 controls. Mostly female, married, primary-middle education. | Assess the effectiveness CSM-based education on blood pressure and self-management behaviors hypertensive patients, including self-monitoring, medication adherence, response illness, and |

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| | | | | | follow-up every 3 days for 1 month. Materials covered disease perception, | | self-regulation. |
| Kurt, D. & Gurdogan, E. P. (2022) | The study was conducted in the outpatient polyclinics of internal medicine and cardiology at a secondary care hospital in Edirne Province, Turkey. | July 2017 - August 2018 | RCT with pre-post-test approach in two groups (intervention and control), with blood pressure measurements as well as scales of knowledge, compliance, and self-management | Self-management support included one-session (60-90 minutes) education on hypertension, blood pressure measurement techniques, healthy lifestyle management (diet, stress, physical activity), and provision of an information booklet. The intervention was conducted one week after the initial interview and | 137 hypertensive patients (69 intervention, 68 control), aged 18-65 years, currently taking antihypertensive drugs, able to communicate, and having an upper arm blood pressure monitor. The majority had primary- secondary education, with a diagnosis of hypertension > 1 year. | Assess the effects of self-management support on hypertension knowledge, medication adherence, self-management, and changes in systolic and diastolic blood pressure hypertensive patients. | s<br>s |

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| | | | | lasted for 3 months. | | |
| Kordvarkane, Oshvandi, Mohammadi, & Azizi (2023) | The study was conducted at the heart clinic of Farshchian Hospital, Hamadan, Iran | April 2021 - March 2022 | RCT with pre-post design between two groups, using t-test analysis and chi-square test. | Education based on the Common-Sense Model of Self-Regulation (CSM) for 5 individualized face-to-face sessions (30-45 minutes each, every 6 days), plus telephone follow-up every 3 days for 1 month. Materials covered disease perception, symptoms, control, and duration. | 72 patients with primary hypertension, aged 40-65 years, able to read/write, without acute disorders. There were 36 participants in the intervention group and 36 controls. Mostly female, married, primary-middle education. | Assess the effectiveness CSM-based education on blood pressure and self-management behaviors hypertensive patients, including self-monitoring, medication adherence, response illness, and self-regulation. |
| Hazrati, Zakerimoghadam, Pashaeypoor, & Haghani (2021) | Study conducted in a community health center in the southern region of Tehran, Iran; focused on middle-aged hypertensive patients who had | Started in September 2019 | Two-group pre-test-post-test RCT, with simple random allocation and blinding for statistical analysts | Home visit-based Self-care Education (SCE) for 2 months. Consists of 8 individualized education sessions (45-60 minutes) covering low-salt diet, physical activity, medication adherence, smoking cessation, and blood pressure control. Interventions were tailored to each | 110 primary hypertensive patients aged 35-59 years, selected from public health services; basic literacy, without psychological disorders, and able to communicate. After attrition, 45 intervention and 49 control group people were analyzed. | Assess the effectiveness of home visit-based self-care education on changes in blood pressure and self-care behavior (H-SCALE) in middle-aged hypertensive patients. Focus on medication adherence, diet, physical activity, weight management, and blood pressure control. |

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| | not received prior home- based education. | | | patient's unique needs and involved family members. | | |
| Moraes, J.C.O. & Bezerra, S.M.M. da S. (2022) | The study was conducted in 11 Family Health Strategy (FHS) units in the city of Cajazeiras, Paraíba, Brazil. | January - July 2020 (during the Covid-19 pandemic) | RCT with two parallel groups (intervention and control), with a pre- post-test approach, using parametric and non-parametric statistical tests | Supported self-care-based nursing consultation using the "5A's" approach (Assess, Advise, Agree, Assist, Arrange). Consisting of 6 sessions (3 face-to-face, 3 via phone), the total duration of the intervention was 6 months. Materials include blood pressure monitoring, lifestyle changes, and creation of an individualized treatment plan. | 78 participants (40 intervention, 38 control) with hypertension and intermediate cardiovascular risk (based on Global Risk Score), aged >18 years, had undergone antihypertensive treatment for at least 6 months, majority female, low education, and lower-middle economic status. | Assess the effectiveness of supported self- care consultation on blood pressure and cardiometabolic profile of hypertensive patients, including changes in body weight, waist circumference, waist-hip ratio, body mass index (BMI), and metabolic syndrome status. |
| Delavar, F., Pashaeypoor, S., & Negarandeh, R. (2020) | Study conducted at the cardiac clinic of Fayyazbakhsh Hospital, Tehran, Iran; focus on older adults with uncontrolled primary hypertension and low health literacy level | January - March 2018 | Two-group pre-test-post-test RCT, with block randomization and analysis of covariance (ANCOVA) | Health Literacy Index ( HLI)-based Self-Management Education (SME): consists of 2 face- to- face sessions (30-45 minutes) followed by 4 telephone education sessions (15 minutes, 2x/week). Materials are tailored to the health literacy level of participants, using a teach-back approach. | 112 elderly participants (>60 years) with uncontrolled primary hypertension and low health literacy (<66% HELIA score), Persian-speaking, without cognitive or psychiatric impairment. After attrition: 54 interventions, 58 control | Assessing the effectiveness of self-management education tailored to health literacy on medication adherence (MMAS-8) and blood pressure control in hypertensive older adults. |
| (Ma, Cheng, Janet W.H. Sit, et | The study was conducted | October – December 2020 | Randomized Controlled | Educational intervention | 120 older adults aged ≥60 years with | To evaluate the effectiveness of |

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| al., 2022a) | in two elderly community centers located in Haidian District, Beijing, China. It focused on community-based interventions for hypertension management among older adults. | | Trial (RCT), pretest- posttest design with two groups, analyzed using t-test and linear regression | based on the Health Belief Model (HBM) delivered through weekly group lectures, individual counseling, and printed educational materials over a 3-month period. The program aimed to enhance perceived threats and benefits while reducing behavioral barriers. | hypertension, community-dwelling, able to communicate effectively, and without cognitive impairment. Participants were equally allocated to intervention (n = 60) and control groups (n = 60). | HPM-based educational intervention in improving self-management behaviors and reducing blood pressure among older adults with hypertension in community settings. |
| (Liu et al., 2023a) | The study was conducted in two urban community centers in Qingdao City, Shandong Province, China, focusing on older adults with hypertension living in community settings. | October – December 2021 | Randomized Controlled Trial (RCT) employing a pretest–posttest two-group design, analyzed using t-test, logistic regression, and one-way ANOVA. | Randomized Controlled Trial (RCT) employing a pretest–posttest two-group design, analyzed using t-test, logistic regression, and one-way ANOVA. | 120 older adults aged ≥60 years with hypertension, community-dwelling, able to communicate effectively, and without cognitive impairment. Participants were equally allocated to intervention (n = 60) and control groups (n = 60). | To evaluate the effectiveness of HPM-based educational intervention in improving self-management behaviors and reducing blood pressure among older adults with hypertension in community settings. |