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FACTORS INFLUENCING BLOOD PRESSURE CONTROL IN OLDER ADULTS HYPERTENSION: A SYSTEMATIC REVIEW

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ABSTRACT
Hypertension is the leading cause of premature death worldwide, and it increases with age, like many other chronic diseases. Poor blood pressure control behavior is the main cause of hypertension management failure. Objective: Hypertension significantly increases the risk of stroke and heart disease, which is a leading cause of death and disability globally, particularly among older adults. This review identified factors that influence blood pressure control behavior of the elderly with hypertension. Method: The PRISMA guidelines are used as a systematic search in PubMed, Scopus, Sage journals, Google Scholar and Science Direct in 2019 – 2024. The Joanna Briggs Institute's unified analytics framework was adopted for data synthesis. The population in this review is the elderly who suffer from hypertension. Results: A total of 17.542 articles were obtained from the four databases. sixteen articles were selected after extraction and incorporation of inclusion criteria. Conclusion: This review shows that economics, health literacy and education are the main factors in blood pressure control behavior in elderly people suffering from hypertension. Lessons from this review can help improve adherence to hypertension control, prevent health complications, and improve quality of life in the future.

Keywords: blood pressure; hypertension; influential; management; older adults

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INTRODUCTION

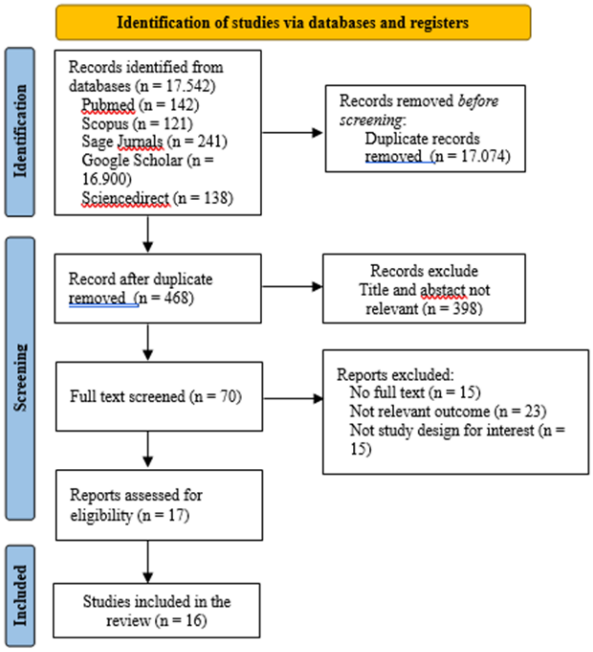
Hypertension is the leading cause of premature death worldwide, with epidemiological estimates estimating that 7.5 million people die each year due to complications of hypertension, which accounts for about 13% of all deaths worldwide (Mills et al., 2020). It is estimated that 1.13 billion people worldwide suffer from hypertension; However, less than 20% of people with hypertension can control the disease (Burnier et al., 2020). Hypertension increases with age, like many other chronic diseases. This increased from 27% in people under 60 to 74% in people over 80 years (Ouellet et al., 2019). Hypertension causes vascular injury and increases the heart's workload. Therefore, hypertension can lead to a variety of serious health conditions such as heart failure, kidney failure, stroke, and coronary artery disease (Delavar et al., 2020). Antihypertensive treatment, regardless of age, is based on two main pillars: lifestyle changes and pharmacological treatment. Non-pharmacological treatment mainly includes diets that help with weight loss, reduce sodium chloride intake, increase physical activity, and quit smoking. In the case of pharmacological treatment, the dosage of the drug must be administered correctly according to the protocol established during each stage of treatment (Korhonen et al., 2020). Poor blood pressure control behaviors, both intentional and unintentional, are the leading cause of hypertension management failures (Oliveros et al., 2020). Inadequate blood pressure control behaviors have been associated with adverse health consequences, increased health care expenditures, and complications associated with hypertension. (Demikhov et al., 2020). This systematic review aims to

analyze the factors that affect the blood pressure control behavior of the elderly with hypertension.

METHOD

The study followed the Cochrane guidelines for conducting systematic reviews and reported in accordance with the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) statement. A literature search was conducted across four databases, they are Scopus, PubMed, Sage Journals, GoogleScholar and Science Direct. The results of the search were limited to humans, studies conducted 5 years ago and English Language to achieve specificity. The search aimed to identify relevant studies by using keywords and Boolean operators (AND, OR, NOT) to refine or expand the results, making it easier to determine which articles to include. The keywords used in the systematic review were adjusted according to Medical Subject Headings (MeSH) and included: ‘hypertension,' 'blood pressure,' 'older adults' 'elderly’, ‘management’ and 'self care’.

The inclusion criteria in this review are as follows: Older adults aged ≥ 60 years; Original cross sectional, qualitative, RCT, or mixed methods studies; elderly people suffering from hypertension; Described in the English language. The exclusion criteria were as follows: The study did not include the population of interest or concerned animal subjects; Conference proceedings, abstracts, review articles, theoretical papers, pilot studies, protocols, dissertations, letters to the editor, opinion (viewpoint), statement papers, government documents, or working papers. The study selection process follows the Data Extraction Based on PRISMA 2015 Guidelines in Figure 1. Researchers independently conducted relevant literature searches, selected which articles to include, as well as performing data extraction for comparison. Screening followed PRISMA guidelines strictly. Initially, articles were excluded based on a review of their titles and abstracts if they did not fulfil the inclusion criteria. After reviewing the full text, some initially included articles were subsequently excluded if they did not fulfil the inclusion criteria. The entire process of data selection and extraction utilised Mendeley reference management software.



The reviewers independently assessed the risk of bias of each included study using the JBI (Joanna Briggs Institute). The researcher carefully assessed the selected articles. The assessment results come from the score of the percentage, which is ≥75% (Good), 50-75% (Fair), and <50% (Poor).

RESULT

A search of Scopus, PubMed, SAGE, Google Scholar, and Science Direct yielded 17.542 publications, of which 17.074 were duplicates. The authors then screened the titles and abstracts, leaving 468 articles by assessing the titles and abstracts as irrelevant. We then assessed 70 articles for full text. Fourteen full papers met the inclusion criteria for this study. Papers eligible for inclusion were mostly observational studies (1 randomized controlled trial, 2 qualitative, 1 mixed-method, and 12 cross-sectional). Participants were older adults (aged 60 years or older) with preexisting hypertension. The included studies were published in the following years: 2020 (n = 3), 2021 (n = 3), 2022 (n = 4), 2023 (n = 3), and 2024 (n = 3). The studies were primarily conducted in the United States (US; n = 2), Iran (n = 2), Indonesia (n = 2), India (n = 2) and Poland (n = 2). The studies reported in the remaining six papers were conducted in German, Vietnam, China, Thailand, Taiwan, and Myanmar.

Table 1.
Characteristics of included studies.

Study	Study Design	Setting	Sample Size	Age of Participants	Main Outcome	Factor affecting
(Delavar et al., 2020)	RCT	Iran	56	>60 years	Self-management education tailored to health literacy significantly promotes medication adherence (P < 0,05)	Self-management Eucation Health literacy
(Khasanah et al., 2024)	Qualitatif	Indonesia	62	>60 years	Five main needs in handling hypertension in the elderly, namely: education, social support, health workers, improving integrated health centers for the elderly, and improving health centers.	Education Social Support and health workers Health Facilities
(Świątoniowska-Lonc et al., 2021)	Cross-sectional	Polandia	300	Mean (SD) 71,71 Years	Factors that increased the rate of intentional non-compliance were advancing age (β = −0.352, p = 0.009) and multimorbidity (β = −2.374, p = 0.035).	Age Morability
(Jones et al., 2022)	Qualitatif	Amerika Serikat	19	Mean = 71,6 years	The obstacles faced by the elderly in managing hypertension are lack of knowledge about diet and lack of financial resources.	Knowledge Economics
(Adinkrah et al., 2020)	Cross-sectional	Amerika Serikat	338	Mean = 70 years	Demographic, social, behavioral, cognitive, and medical factors influence medication adherence in older adults.	Social relationships Morbidity
(Nagamine et al., 2023)	Cross-sectional	Myanmar	573	>60 years	Tingkat pendidikan dan ekonomi dikaitkan dengan ketidakpatuhan (PR 2,68, 95% CI 1,28 hingga 5,59).	Education Economics
(Maniyara et al.,	Mixed method	India	300	>60 years	Availability and accessibility of services,	Access to healthcare

Study	Study Design	Setting	Sample Size	Age of Participants	Main Outcome	Factor affecting
2023)					family support, financial well-being, habits and beliefs, and a supportive environment play a role in managing hypertension.	services Family support Economics
(Darvishpour et al., 2022)	Cross-sectional	Iran	159	60 – 90 years	Health literacy can predict self-efficacy (beta = 0.262, p = 0.001) and self-care behavior (beta = 0.639, p = 0.000).	Health literacy
(Berutu & Syafitri, 2024)	Cross-sectional	Indonesia	73	61-76 years	The dominant factor is family support p = 0.004 with Exp (B) 90.993 which affects compliance with blood pressure management in hypertensive elderly with hypertension.	Family support
(Chu et al., 2021)	Cross-sectional	Taiwan	300	Mean : 75.9 years	The CART model revealed that health belief, disease duration, self-efficacy, and social support interacted to contribute to various pathways of low medication adherence. The predicted accuracy of the model was validated with a low misclassification rate of 26%.	Health beliefs Duration of disease Self-efficacy Social support
(Chantakeeree et al., 2021)	Cross-sectional	Thailand	420	>60 years	Perceived self-efficacy and income were predictors of health-promoting behaviors.	Self-efficacy Economics
(Wan et al., 2022)	Cross-sectional	Tiongkok	388	60 – 84 years	Statistically significant predictors included those living with a partner and offspring (OR = 3.004, p = 0.017), and those with high blood pressure on hospital admission (OR = 1.910, p = 0.003)	Marital status Complications
(Huy et al., 2024)	Cross-sectional	Vietnam	220	Mean : 72 years	In elderly with hypertension, self-care behavior is considered as a mediating factor in the relationship between health literacy and blood pressure (BP) control.	Health literacy
(Pobrotyn et al., 2023)	Cross-sectional	Polandia	100	Mean : 70 years	Better adherence to treatment recommendations was found in patients with higher or secondary education and patients with a good or very good	Education Economics

Study	Study Design	Setting	Sample Size	Age of Participants	Main Outcome	Factor affecting
					financial situation ($p < 0.05$).	
(Muli et al., 2020)	Cross-sectional	German	790	Mean : 75,9 years	Higher education attainment or presence of comorbidities was associated with higher level of hypertension awareness.	Comorbidities Education
(Boro & Banerjee , 2022)	Cross-sectional	India	28.481	60 years & above	ducation, comorbidities, and tobacco consumption were the major contributors to the urban–rural inequality, which accounted for 12.3%, 10.6%, and 9.8% of the gap, respectively.	Comorbidities Education Smoking

DISCUSSION

Synthesis of data from systematic reviews has identified sixteen key factors influencing blood pressure control behaviors among older adults living with hypertension. Blood pressure control behavior is determined by factors related to the elderly such as self-efficacy, education, age, marital status and economy. Factors positively associated with blood pressure control behavior in older adults include self-management, health literacy about hypertension, social support from family and health workers, morbidity, beliefs, access to health services, comorbidities, smoking, and quality of life.Age is associated with more cardiovascular comorbidities and risk factors, and poor hypertension management. Chronic diseases, including hypertension, adversely affect the quality of life (QOL) of a population. Research shows that systolic hypertension is more common in people over the age of fifty to sixty, while diastolic blood pressure tends to decline as a result of age-related changes in artery structure and function. Strategies for managing blood pressure become more difficult because these shifts can cause pulse pressure to increase (Zhang & Cai, 2022).

Highly educated seniors are knowledgeable about their illness and more aware of the need to manage blood pressure (Pobrotyn et al., 2023). Blood pressure control behavior in the elderly is influenced by health literacy skills, including the ability to understand health information. Health care providers must have good communication skills and consider dementia factors in the elderly that may affect the ability of the elderly to understand the information that has been provided (Afiani et al., 2023). Low levels of health literacy can hinder the participation of older persons in educational interventions, resulting in loss of benefits and delays in adopting timely self-care behaviours (Huy et al., 2024).Another factor that affects the behavior of the elderly is financial condition. Seniors with less financial conditions have a detrimental impact on many aspects of life, and this may include healthcare. Support from family, peers, and healthcare workers provides emotional, appreciative, informative, and instrumental support, which improves medication adherence and improves blood pressure control, as well as motivation to perform blood pressure control behaviors (Yuni, 2023).

In addition, the presence of a partner can provide emotional and practical support, which is essential for managing chronic conditions such as hypertension. Seniors who have experienced divorce or whose spouse has died may face increased stress and isolation, which contributes to poorer health outcomes and less effective blood pressure management (Fan et al., 2024)Access to health services plays an important role in treating hypertension in the elderly. Better access to primary health services is significantly associated with increased

awareness and control of high blood pressure among older adults (Choi & Kim, 2023). The Integrated Pos Pelayanan Kesehatan Terpadu Lansia (POS-Lansia) program in rural Indonesians shows that public health cadres can significantly improve access to health, resulting in better hypertension management among elderly participants (Khasanah et al., 2024).This systematic literature review has several limitations. First, this study only included publications in English, so it may have missed other relevant publications. In addition, excluding publications outside the study's objectives may have led to the loss of important research, limiting the scope of the study.

CONCLUSION

Of the fourteen articles in this study, five articles mentioned that the influencing factor in the behavior of controlling blood pressure of the elderly was the economy and four articles mentioned that the influencing factor was health literacy and education. These findings are instrumental in guiding the development of innovative, evidence-based interventions designed to improve blood pressure control behaviors in older adults with hypertension. Interventions involving better hypertension control have the potential to lead to better health outcomes and better quality of life.

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