

A SYSTEMATIC REVIEW: PHARMACIST INTERVENTIONS TO IMPROVE BLOOD PRESSURE CONTROL AMONG HYPERTENSIVE PATIENTS

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ABSTRAK

Hipertensi adalah penyakit kronis non-infeksius yang memerlukan pengobatan jangka panjang untuk mengendalikan tekanan darah. Pada kasus hipertensi, seringkali terdapat permasalahan pada kepatuhan pasien dalam pelaksanaan pengobatan. Oleh karena itu, tugas apoteker adalah meningkatkan pemahaman pasien terhadap pengobatan, yang berdampak pada pencapaian hasil terapi yang diinginkan. Tujuan penelitian ini adalah memberikan tinjauan terkait efektivitas intervensi apoteker terhadap outcome klinis pasien hipertensi berupa pengendalian tekanan darah dan kepatuhan pengobatan pasien. Metode dalam studi ini berupa pencarian literatur menggunakan database elektronik Scopus yang dipublikasi pada tahun 2013 hingga 2022. Pemilihan artikel mengikuti beberapa kriteria meliputi artikel berbahasa Inggris, menilai efek intervensi yang dipimpin oleh apoteker terhadap level tekanan darah dan kepatuhan pengobatan pada pasien hipertensi, desain penelitian Randomized Controlled Trials (RCTs), quasi eksperimental. Hasilnya menunjukkan bahwa dari total 259 yang diperoleh, terdapat 5 artikel yang memenuhi kriteria inklusi. Seluruh penelitian menunjukkan perbaikan pengendalian pada tekanan darah. Pengendalian tekanan darah dan perbaikan kepatuhan pengobatan dicapai setelah 6 sampai 12 bulan intervensi oleh apoteker. Intervensi apoteker berupa telefarmasi, review pengobatan, visite apoteker, dan konseling kepatuhan dan edukasi. Kesimpulannya adalah intervensi yang diberikan Apoteker dapat meningkatkan pengendalian tekanan darah dan kepatuhan pengobatan pasien hipertensi. Penelitian selanjutnya direkomendasikan menilai penerimaan pasien dan hambatan terhadap intervensi yang diberikan Apoteker serta menentukan intervensi Apoteker manakah yang paling efektif.

Kata kunci : hipertensi, intervensi apoteker, pengendalian tekanan darah, kepatuhan pasien

ABSTRACT

Hypertension is a chronic, non-infectious disease that requires long-term treatment to control blood pressure. In cases of hypertension, there are often problems with patient compliance in carrying out treatment. Therefore, the pharmacist's task is to increase the patient's understanding of treatment, which has an impact on achieving the desired therapeutic results. The aim of this study is to provide an overview of the effectiveness of pharmacist interventions on the clinical outcomes of hypertensive patients in the form of blood pressure control and patient medication compliance. The method in this study was a literature search using the Scopus electronic database published from 2013 to 2022. The selection of articles followed several criteria including English language articles, assessing the effect of pharmacist-led interventions on blood pressure levels and medication adherence in hypertensive patients, Randomized research design Controlled Trials (RCTs), quasi experimental. The results showed that of the total of 259 obtained, there were 5 articles that met the inclusion criteria. All studies show improved control of blood pressure. Blood pressure control and improved medication adherence were achieved after 6 to 12 months of intervention by pharmacists. Pharmacist interventions include telepharmacy, medication reviews, pharmacist visits, and compliance counseling and education. The conclusion is that interventions provided by pharmacists can improve blood pressure control and treatment compliance in hypertensive patients. Future research is recommended to assess patient acceptance and barriers to interventions provided by pharmacists and determine which pharmacist interventions are most effective.

Keywords : hypertension, pharmacist intervention, blood pressure control, patient adherence

INTRODUCTION

Hypertension is a major risk factor for cardiovascular disease, defined by an increase in blood pressure (BP) (systolic ≥ 140 mmHg and/or diastolic ≥ 90 mmHg) (Whelton et al., 2018). Hypertension poses a significant burden in developing countries (Soubra and Elba, 2023), globally more than 1.13 billion people suffer from hypertension which is the main cause of premature death (Moza et al., 2021). (Moza et al., 2021). Data from the World Health Organization (WHO) estimates that 25% of the world's population will suffer from hypertension in 2025. In Southeast Asia, hypertension is in the third highest position with a prevalence of 25% of the total population and in Indonesia the increase in prevalence is around 5% of the total population which burdens national health financing (Kemenkes RI, 2019). Uncontrolled hypertension is a major risk factor for heart failure, ischemic heart disease, stroke, kidney failure (Reeves et al., 2021; Soubra and Elba, 2023). Despite the latest developments in hypertension management, only 1 in 5 adults with hypertension is under control (Edwards et al., 2022; Mills et al., 2016; Soubra and Elba, 2023; World Health Organization (WHO). Guideline for the pharmacological treatment of hypertension in adults; 2021, n.d.). Sufferers of this chronic disease take medication long term or perhaps for life, so their level of compliance is lower than sufferers of illnesses with other acute health problems (Seguin et al., 2022). Several things that underlie the lack of blood pressure control in hypertension sufferers are caused by suboptimal therapy, low level of patient knowledge and awareness, inadequate access to health services, patient non- adherence with therapy and suboptimal monitoring and follow-up. (Ibrahim et al., 2022; Moza et al., 2021; Soubra and Elba, 2023).

Patient non-adherence to antihypertensive medication is associated with negative health impacts and increased healthcare costs (Reeves et al., 2021). Patient non- adherence is often caused by lack of attention, lack of knowledge, high levels of worry, low confidence in medications so that motivation for medication becomes low (Alfian et al., 2020). Therefore, appropriate strategies to increase patient adherence are needed which will improve blood pressure control in hypertensive patients. Various interventions have been developed in various developed countries such as patient education, medication regimen management, cognitive behavioral therapy, medication reminders and providing incentives. It's just that this intervention is considered too complicated (Hovland et al., 2020), and it's not effective in increasing patient adherence. Implementing appropriate patient adherence interventions is a challenge in developing countries due to the lack of economic resources and health services (Alfian et al., 2020).

Efforts to improve treatment adherence are not only the responsibility of patients, but also require interprofessional collaboration among health care professionals and active government action. To overcome the problem of non-compliance, intervention by health workers through various media such as counseling, education and treatment guidance techniques is very necessary (Amir et al., 2018). Moreover, methods to measure the level of adherence, such as self-report, pill counting, and electronic monitoring are needed to find appropriate solutions to patient problems (Lane et al., 2022).

Pharmacist intervention is part of pharmaceutical care to assess, identify drug-related problems, make plans, and find appropriate solutions, leading to effectiveness and the most optimal outcomes. Pharmaceutical services by pharmacists have a role and contribution in achieving the goals of hypertension medication, namely controlling blood pressure, and improving the patient's quality of life (Di Palo and Kish, 2018; Ibrahim et al., 2022; Moza et al., 2021; Reeves et al., 2021; Soubra and Elba, 2023). Counselling and education carried out by pharmacists is reported to have a significant impact on improving blood pressure, body mass index, lipid levels and patient awareness scores, which has the potential to reduce the risk of cardiovascular disease (Fahs et al., 2018). Form active involvement of pharmacists in

hypertension management through disease-related education, counselling, blood pressure monitoring, therapy monitoring and adherence monitoring (Resmiati et al., 2020; Soubra and Elba, 2023). This study was conducted to provide an overview of the effects of pharmacist intervention in the practice of pharmaceutical services on blood pressure control and medication adherence in hypertensive patients.

METHOD

This study is a systematic review using Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) as a screening tool and use methodology The Joanna Briggs Institute (JBI) (“Joanna Briggs Institute. Critical appraisal tools. 2022,” n.d.).

Literature Search

Search for relevant literature using electronic databases SCOPUS. Some of the following keyword combinations are used by utilizing Operator Boolean “OR” and “AND” there are “Pharmacist intervention”, Pharmacist role”, “Pharmacist counselling”, “Hypertensi”, “Blood Pressure control”, “Patient compliance”, Patient adherence”. The criteria for included articles are in English and published between 2013 and 2022. The literature search strategy is shown in Table 1.

Table 1. Literature Search Strategy

Database	Keywords	Number of articles
SCOPUS	(TITLE-ABS-KEY (pharmacist AND intevention) OR TITLE-ABS-KEY (pharmacist AND role) OR TITLE-ABS-KEY (pharmacist AND counselling) AND TITLE-ABS-KEY (patient AND compliance) OR TITLE-ABS-KEY (patient AND adherence) AND TITLE-ABS-KEY (hypertension) OR TITLE-ABS-KEY (blood AND pressure)) AND PUBYEAR > 2012 AND PUBYEAR < 2023 AND (LIMIT-TO (LANGUAGE , "English"))	259

Literature Selection

The literature used was developed from the following things: (1) pharmacist intervention in pharmaceutical services, (2) assessing clinical outcomes in the form of blood pressure measurements and patient adherence and (3) studies conducted on hypertensive patients. The literature selection strategy in this review adopts a framework PICO (Table 2).

Table 2. PICO Framework in Literature Selection

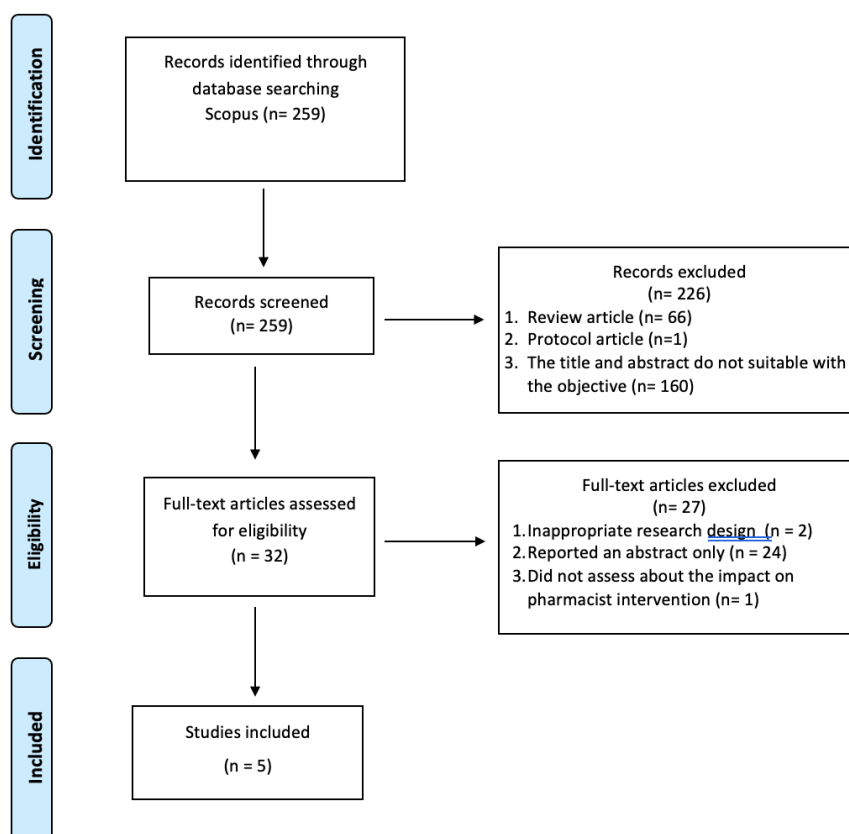
Population	Patients diagnosed with hypertension
Intervention	Study that focuses on interventions carried out by pharmacists
Comparison	Regular pharmaceutical services or usual care
Outcome	Clinical outcomes with blood pressure control parameters and patient adherence

The article selection process is carried out in three stages: the first is through title screening, followed by the abstract and, if further information is needed, by evaluating the full text. Full text articles were selected if they met the inclusion criteria using the PICO framework and were guided by the following: (1) original research, (2) included study designs were Randomized Control Trials (RCTs), Quasi Experimental, (3) research published from 2013 to 2022, (4) limited to English. As for articles that do not display results, articles in the form of conference proceedings, letters, editorials, comments, posters, reviews are excluded from this review. The stages of the literature selection process are shown in the PRISMA flow diagram

(Fig. 1). The full text screening process was carried out by the independent first author (NY) and any uncertainties were resolved through discussion with the second author (IK).

Data Extraction

Reviewers independently extracted data from each selected article in a data collection form in an Excel spreadsheet. Data extracted included article ID (author, year), country, study objectives, methods (design, study population, sample size, length of intervention), type of pharmacist intervention and summary of results. Any differences in the results of the data extraction carried out by author NY were reconciled through the second author (IK).



Picture 1. PRISMA Flowchart

Literature Quality Assessment

Determining study quality using Critical Appraisal tools by Joanna Briggs Institute (JBI) obtained through the official JBI website (<https://jbi.global/critical-appraisal-tools>). JBI is a quality assessment tool for various study designs that is suitable for systematic reviews that combine different study designs. In this systematic review, appropriate assessment tools were used for RCTs and quasi-experimental ones. Quality assessment was performed independently by two authors (NY and IK). The answer "Yes" is given a value of one if the study meets the quality requirements based on the critical appraisal tool criteria. Then the scores are added up and the higher the score, the better the quality.

RESULT

Study Characteristics

The Studies yielded 259 potentially eligible articles using a digital search published in the SCOPUS database, using several keywords and utilizing the Boolean operators "OR" and

“AND”. Studies were conducted in several countries, there are Uni Emirat Arab (U.E.A), Pakistan, two studies were conducted in Ghana dan United State America (USA). Two studies used an RCT design, while the other 3 studies were mixed methods RCT, prospective pre post study, quasi experimental. The number of samples included in the study ranged from 40 to 239. Study characteristics are shown in Table 3.

Table 3. Summary of Study Characteristics and Key Findings

Reference	Country	Study Purposes	Design of Study	Length of Intervention	Types of Pharmacist intervention	Key Findings
Ibrahim et al., 2022	U.A.E	Assess the effecti-veness of tele-pharmacy in hyper-tension manage-ment and its impact on pharma-cists' ability to identify drug-related problems	Randomized Controlled Trials (RCTs)	12 months	Intervention group: Telepharmacy (remote filling of prescriptions, virtual counselling, and home delivery of medications) Control group: traditional pharmaceutical services that include face-to-face interaction with patients	Telepharmacy statistically significantly reduced blood pressure in hypertensive patients, increased medication adherence, significantly improved knowledge of towards hypertension
Mozu et al., 2021	Ghana	Assessing the effectiveness of workplace pharma-ceutical services on adherence and control of blood pressure	Prospective pre-post	6 months	Medication Review (Based on the Pharmaceutical Care Network Europe (PCNE) V8.02 classification) Adherence counselling and patient education	Improves medication adherence statistically (MARS-10) ($p \leq 0.00$). Reducing systolic and diastolic hypertension patients ($p \leq 0.00$)
Malik et al., 2022	Pakistan	evaluate the impact of pharmacist counseling on blood pressure and blood glucose control among patients having both hyper-tension and diabetes	RCTs, single blind, pre-post intervention	6 months	Intervention group: in-depth counseling by a community pharmacist (about the disease, its complications, medication, lifestyle modification and self-monitoring of the disease. Each patient also receives consultation based on individual needs)	Systolic BP were significantly controlled after 6 months in the group receiving pharmacy counseling, also improving medication adherence

					Control group: pharmacy services as usual (dispensing medication and providing information regarding medication administration)	
Marfo and Owusu- Daaku, 2017	Ghana	Evaluate the effect of a pharmaceu- tical care model on blood pressure control and adherence among hypertensi-ve patients	Quasi experimental design	6 months	Health education, adherence counselling, and medication use review.	The pharmaceutical care intervention offered by improvement in diastolic blood pressure and adherence among hypertensive patients
Parker et al., 2014	USA	Examines blood pressure after 6 months of an intensive pharmacist- managed intervention	Mixed methods RCT	6 months	Structured pharmacist visits, telephone calls at 2 weeks and between the in-person visits as needed, review the CPRS electronic medical record, structured interview	Significantly decrease both systolic and diastolic BP levels after 6- months intensive pharmacist intervention, also significantly improve medication adherence

Study Quality

The Joanna Briggs Institute (JBI) Critical Appraisal is used to assess and analyze the quality of the articles that have been obtained. Based on what has been determined by the author, articles will be included in data synthesis if the final score assessed meets the Critical Appraisal criteria of at least 70% with the answer "Yes". Five studies assessed by JBI Critical Appraisal showed high and moderate article quality in Table 5 and Table 6.

Pharmacist Intervention

The Pharmacist intervention is described by adopting the American College of Clinical Pharmacists' pharmaceutical service model which focuses on three main components; identifies actual and potential drug-related problems, resolves actual drug-related problems, and prevents potential drug-related problems. Using a pharmaceutical service model, several intervention methods by pharmacists become references such as monthly medication use reviews, health education, and adherence counselling (Alzahrani et al., 2021). Interventions carried out by pharmacists in this review were provided in various forms including telepharmacy services, medication reviews, patient education, counselling, structured visits. Pharmacist interventions are delivered over a six-to-twelve-month monitoring period.

Clinical Outcomes and Medication Adherence

All studies included in the systematic review reported significant improvements in pharmacist intervention on clinical outcomes and medication adherence. The study results are summarized in Table 4.

Blood Pressure Control Parameters

Blood pressure control is defined by the parameters of decreasing systolic and diastolic blood pressure (Whelton et al., 2018). All studies demonstrated clinically significant improvements in blood pressure control in the Pharmacist intervention group. One study noted the largest reduction in baseline systolic blood pressure of -21 mmHg (-24.6 to -18.8) and diastolic blood pressure of -6.5 (-9.1 to -5.2) after a 12-month follow-up intervention by pharmacists using telepharmacy services. (Ibrahim et al., 2022).

Medication Adherence

Patient adherence with medication in systematic observations is defined as the extent to which patient behavior complies with the recommended medication dosage regimen, including time, dose, and interval of medication intake. (Gast and Mathes, 2019; Ogungbe et al., 2021). Various methods of measuring medication adherence were used in the studies in this systematic review. Two studies used the Morisky Medication Adherence Scales (MMAS-8) adherence measurement method, 1 study used two MMAS-8 methods and the Hill-Bone questionnaire and one study used the Medication Adherence Rating Scale (MARS-10) measurement method.

Medication adherence assessment presented a statistically significant increase in patient adherence to their medication after intervention by the Pharmacist. There is one study reporting that participant adherence has a high scale (95%) as measured using the MARS-10 method (Moza et al., 2021).

Table 4. Summary of Study Results

Reference	Pharmacist Intervention	Blood Pressure Measurement Results	Medications Adherence
Ibrahim et al., 2022	Telepharmacy	<ol style="list-style-type: none"> Systolic Blood Pressure (SBP) Pharmacist Intervention: Mean SBP was reduced from 145.9 mm Hg to 124.5, 123.2, 123.5, and 124.9 mm Hg at 3-, 6-, 9-, and 12-months follow-up. Control Group: Mean SBP was reduced from 146.7 mm Hg to 135.9, 133.8, 133.7, and 132.4 mm Hg at 3-, 6-, 9-, and 12-months follow-up. Diastolic Blood Pressure (DBP) Pharmacist Intervention: Mean DBP was reduced from 84.3 mm Hg to 77.6, 76.2, 76.1, and 77.8 mm Hg at 3-, 6-, 9-, and 12-months follow-up. Control Group: Mean DPB was reduced from 85.1 mm Hg to 82.3, 81.5, 81.5, and 81.9 mm Hg at 3-, 6-, 9-, and 12-months follow-up. 	There was a significant increase in medication adherence in the group given by pharmacist intervention (using the Morisky Scale), the mean score of the intervention group significantly increased respectively from 4.9 (baseline) to 7.3, 7.9, 7.9, and 7.6 at 3-, 6-, 9-, and 12-months follow-up

Mozu et al., 2021	<ol style="list-style-type: none"> 1. Medicine use review (Based on the Pharmaceutical Care Network Europe (PCNE) V8.02 classification) 2. Adherence counselling and patient education 	<ol style="list-style-type: none"> 1. Baseline: mean of systolic 145 mm/Hg \pm 18.4. mean of diastolic 90 \pm 12.1 mm/Hg 2. There is a significant difference in mean systolic blood pressure and baseline (M systolic = 145 \pm8.4) and after 6-months of follow-up (M systolic = 130 \pm 11.0), (t(42) = 7, p \leq 0.00). 3. Difference in mean diastolic blood pressure at baseline and after 6 months (M diastolic = 90 \pm12.1) and after 6-months of follow-up (M diastolic = 81 \pm7.2) statistically significant (t(42) = 6, p \leq 0.00). 4. After 6 months: 23 patients had their blood pressure well controlled, the number of patients with controlled blood pressure increased from 12 patients (baseline) to 35 patients (81.4%). However, eight (18.6%) participants remained uncontrolled. 5. The decrease in mean systolic and diastolic blood pressure and the difference in mean adherence scores were statistically significant after 6 months of follow-up (p \leq 0,00). 	<ol style="list-style-type: none"> 1. Nineteen patients were assessed as adherent to medication on the Medication Adherence Rating Scale (MARS-10) at the start of the study. After six months of follow-up: 43 patients were assessed as adherent to medication. 2. Statistically significant difference between mean adherence scores at the start of the study (initial M = 5.5, SD = 2.6) and after 6 months (6-month M = 8.9, SD = 0.3) follow-up (p = 0.00).
Malik et al., 2022	Counselling	<p>Pharmacist intervention groups:</p> <ol style="list-style-type: none"> 1. Baseline, systolic blood pressure, 142,15 mmHg (\pm9,36). after 6 months significantly controlled: (130.10 \pm6.89) 2. Baseline, diastolic blood pressure, 95.08 (\pm10.96). after 6 months significantly controlled: (88.83\pm5.38) 	<p>There was a significant difference (p \leq 0.05) observed in the regimen screening and recall screening of adherence to taking hypertension medication between the groups before and after pharmacist intervention.</p>
Marfo and Owusu-Daaku, 2017	Health education, adherence counselling, and medication use review.	<p>The mean diastolic blood pressure difference between the intervention group and the control group was statistically significant (p = 0.001).</p> <p>Intervention groups: Mean SBP (baseline): 152,3 mmHg, after 6 months 143,4 mmHg. Mean difference (95%CI) 9,28 (12,79 to 5,79) (p-Value 0.000)</p> <p>Mean DBP (baseline): 87,6 mmHg, after 6 months 78,5 mmHg. Mean difference (95%CI) 9,040 (12,77 to 5,30) (p-Value 0.000)</p>	<ol style="list-style-type: none"> 1. The mean adherence difference between the two groups was also statistically significant at the end of the study. (p = 0.001). 2. Adherence measurement (Patient's self-report using the 8 item Morisky scale)

Parker et al., 2014	Structured pharmacist visits, telephone calls at 2 weeks and between the in-person visits as needed, review the CPRS electronic medical record, structured interview	<ol style="list-style-type: none"> Blood pressure decreased significantly in diabetic patients after intensive pharmacist intervention (-8.0/-4.0 ± 14.4/9.1 mmHg systolic/diastolic, respectively, P<.001 and P=.001). Blood pressure was reduced even more in non-diabetic patients (-14.0/-5.0 ± 1.9/10.0 mmHg systolic/diastolic, P<.001). Blood pressure was significantly lower at 6 months after intensive pharmacist intervention. 	<ol style="list-style-type: none"> Medication adherence increased significantly from baseline to 6 months (P=0.017). (using Morinsky Score) Improvement in adherence as measured by the Hill-Bone questionnaire tended in the same direction as Morisky, but patient adherence scores with the Hill-Bone adherence instrument at baseline left little room for improvement. Correlation coefficients for Morisky and Hill-Bone scores at baseline and at 6 months were 0.67 and 0.447, respectively (P<.0001). This trend shows that the two fulfillment tools mutually support each other.
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Table 5. JBI Critical Appraisal Assessment for RCT Studies

Reference	Validity-JBI Checklist													Score	Quality
	1	2	3	4	5	6	7	8	9	10	11	12	13		
Ibrahim et al., 2022	Yes	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	69%	Mode rate
Malik et al., 2022	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	92,3 %	High
Parker et al., 2014	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	76,9 %	Mode rate

Table 6. JBI Critical Appraisal Assessment for Quasi-Experimental Studies

Reference	Validity-JBI Checklist									Score	Quality
	1	2	3	4	5	6	7	8	9		
Mozu et al., 2021	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	88,9%	High
Marfo and Owusu-Daaku, 2017	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	88,9%	High

DISCUSSION

Systematic review presents the effectiveness of pharmacist interventions through various methods such as patient education, counselling, medication reviews which provide significant results in increasing blood pressure control and medication adherence in hypertensive patients. The role of pharmacists is considered very important, especially being directly involved in pharmaceutical services to improve clinical outcomes in hypertensive patients (Houjazi et al., 2021). In another study, it was reported that pharmacist interventions, such as medication therapy management services, can identify and overcome barriers to patient adherence, which has the potential to reduce the risk of increasing health and other costs (Jacob et al., 2022). Pharmacist interventions whether carried out alone or in collaboration (Alzahrani et al., 2021) with other health professionals are considered to improve blood pressure management, increase medication adherence, and optimize therapy with a gradual approach (Al-Arkee & Al-Ani, 2023; Bajorek et al., 2016; Motlohi et al., 2023; Santschi et al., 2014).

The improvements in blood pressure control and medication adherence reported in the current systematic review are consistent with the findings of previous systematic reviews and

meta-analyses, which assessed the impact of pharmacist interventions in community pharmacies on hypertension control with 16 RCTs illustrating pharmacist interventions in the form of hypertension patient education, prescribing management. , concerns regarding medication safety, lifestyle advice was associated with reduced systolic and diastolic blood pressure, [11 studies (2240 patients); -6.1 mmHg (95% confidence interval, -3.8 to -8.4 mmHg); $P < 0.00001$] and diastolic blood pressure [11 studies (2246 patients); -2.5 mmHg (95% confidence interval, -1.5 to -3.4 mmHg); $P < 0.00001$] (Cheema et al., 2017). Also supported by a subsequent systematic review and meta-analysis, which assessed the effectiveness of general practice-based Pharmacist interventions in reducing medical risk factors for the primary prevention of cardiovascular events with 21 RCTs illustrating that patients receiving Pharmacist interventions were associated with statistically significant reductions in systolic blood pressure and diastolic blood pressure (-9.33 mmHg [95% Confidence Interval (CI) -13.36 to -5.30]) and a positive impact on patient adherence to medication (Alshehri, et al., 2019).

The studies included in the current systematic review reported improvements in patient adherence to hypertension medication, this is also in line with a subsequent systematic review, which assessed the effectiveness of community-pharmacist interventions in improving medication adherence and other health outcomes, of which twenty-two studies were analyzed is showed that community pharmacist intervention contributed to increased patient adherence and better blood pressure control, cholesterol management, asthma and Chronic Obstructive Pulmonary Disease (COPD) control (Milosavljevic et al., 2018)

Several limitations in this systematic review are noted as follows, the search only used one Scopus database so that it could limit the opportunity to identify other research published in other databases and potentially eligible, only English-language studies were included in this systematic review so the possibility of related data from countries However, other studies and gray literature were not included in this review, the possibility of potential publication bias may occur because this review was limited to published literature only, other health outcomes identified from each study were not included in this systematic review.

CONCLUSION

Systematic review shows that interventions carried out by pharmacists are effective in improving blood pressure control in hypertensive patients and adherence to medication with antihypertensive medicines. Future research is needed to assess patient acceptance and barriers to interventions provided by pharmacists and determine which pharmacist interventions are most effective.

ACKNOWLEDGMENT

The researcher would like to thank all parties for their support, inspiration, and inspiration in helping the researcher complete this study.

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