



EFFECTS OF BACK MASSAGE AND MUSIC RELAXATION ON BLOOD PRESSURE AMONG PATIENTS WITH HYPERTENSION: A LITERATURE REVIEW

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ABSTRACT

Hypertension is a leading contributor to cardiovascular morbidity and mortality. Non-pharmacological strategies such as back massage and music relaxation have been proposed to attenuate sympathetic activation and stabilize blood pressure. Grounded in relaxation theory and stress physiology, this review synthesizes current evidence on the effectiveness of these interventions in patients with hypertension. A systematic review was conducted in accordance with PRISMA guidelines across national and international databases (2020–2025). The research question was structured using the PICO framework. Quasi-experimental and randomized controlled trials involving hypertensive patients and reporting pre–post or between-group changes in blood pressure were eligible. Of 312 records identified, 97 duplicates were removed. After title–abstract screening of 215 records and full-text assessment of 69 articles, 15 studies met the inclusion criteria and were narratively synthesized. Most studies demonstrated statistically significant reductions in systolic and diastolic blood pressure following back massage, music therapy, or combined relaxation approaches. However, notable heterogeneity was observed in intervention protocols, duration, comparators, and control for confounding factors. Back massage and music relaxation appear to be safe, complementary interventions with promising potential to reduce blood pressure among individuals with hypertension. Nonetheless, rigorously designed randomized controlled trials with standardized protocols and longer follow-up are warranted to strengthen the evidence base.

Keywords: back massage; hypertension; music therapy; non-pharmacological interventions

How to cite (in APA style)

Gusmão, L. A. P., Wahyuningsih, I. S., Rochmawati, D. H., & Melastuti, E. (2026). Effects of Back Massage and Music Relaxation on Blood Pressure among Patients with Hypertension: A Literature Review. *Indonesian Journal of Global Health Research*, 8(3), 607–616. <https://doi.org/10.37287/ijghr.v8i3.1277>.

INTRODUCTION

Hypertension is a major global health concern that substantially contributes to morbidity, mortality, and the economic burden on healthcare systems. Persistently elevated blood pressure increases the risk of cardiovascular complications, including stroke, coronary heart disease, renal failure, and premature death (Yulita, 2021). Although pharmacological therapy is effective, the proportion of patients achieving optimal blood pressure control remains suboptimal, often due to inconsistent medication adherence, adverse effects, and limited access to healthcare services. These challenges underscore the need for comprehensive approaches that integrate pharmacological treatment with safe, feasible, and low-cost non-pharmacological strategies (Hermawan et al., 2024).

Among various non-pharmacological options, back massage and music relaxation have gained increasing attention as complementary therapies for patients with hypertension. Back massage is hypothesized to stimulate parasympathetic activity, promote peripheral vasodilation, reduce muscle tension, and attenuate stress responses (Vijayakumar et al., 2024). Meanwhile, music relaxation may decrease anxiety, stabilize autonomic nervous system activity, and lower heart rate, thereby contributing to physiological reductions in blood pressure. Both interventions are relatively simple to administer in clinical and community settings (Kafitri et al., 2024).

However, existing evidence remains mixed. While several studies report significant reductions in systolic and diastolic blood pressure, others demonstrate limited or inconsistent effects depending

on intervention duration, massage techniques, music types, and patient characteristics. Moreover, a comprehensive synthesis directly comparing and integrating findings on these two interventions in hypertensive populations is still lacking (Mayangsari et al., 2022).

Given these gaps, a structured literature review is warranted to summarize current evidence, evaluate methodological rigor, and identify clinical implications and research priorities. This review aims to examine the effects of back massage and music relaxation on blood pressure among individuals with hypertension, thereby providing an evidence-based foundation for developing more standardized complementary interventions in nursing practice and healthcare delivery.

METHOD

Study Design

This study employed a systematic literature review aimed at synthesizing empirical evidence on the effects of back massage and music relaxation on blood pressure among patients with hypertension in emergency care settings. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, ensuring transparent documentation of article identification, screening, eligibility assessment, and final inclusion.

Data Sources and Search Strategy

A comprehensive search was conducted across reputable international and national databases, including PubMed, Scopus, ScienceDirect, Wiley, Google Scholar, and open-access nursing journal portals. The search strategy used a combination of keywords and Boolean operators:

“back massage” OR “slow stroke massage” OR “therapeutic touch” AND “music relaxation” OR “music therapy” AND “hypertension” OR “high blood pressure” AND “blood pressure” AND “quasi-experimental” OR “randomized controlled trial.”

Search limits were applied consistently across databases where available. These filters included publication years from 2020 to 2025, articles published in English or Indonesian, studies involving human participants, and full-text availability in open-access format. Additionally, study design filters were applied to include quasi-experimental studies and randomized controlled trials (RCTs). Following the application of these limits, a total of 312 records were identified across all data sources, comprising PubMed (n = 86), ScienceDirect (n = 74), Scopus (n = 48), Wiley Online Library (n = 22), and Google Scholar and open-access nursing journal portals (n = 82). In PubMed, article-type filters were applied, while in Scopus and ScienceDirect, results were refined by subject area (nursing and health sciences) and document type (original research articles). Searches in Google Scholar were restricted to title and abstract relevance to enhance specificity.

This systematic and structured search strategy facilitated the identification of high-quality empirical evidence relevant to the effects of back massage and music therapy as non-pharmacological interventions for blood pressure control among patients with hypertension.

PICO Framework

The research question was formulated using the PICO framework:

Population (P): adults with hypertension

Intervention (I): back massage and/or music relaxation (alone or in combination)

Comparison (C): standard care, single intervention, or control groups

Outcome (O): changes in systolic and diastolic blood pressure

Inclusion Criteria

Studies were included if they met the following criteria:

1. Quasi-experimental or randomized controlled trial (RCT) design;
2. Participants diagnosed with hypertension;

3. Interventions involving back massage, music relaxation, or their combination;
4. Reported pre–post or between-group blood pressure outcomes;
5. Published between 2020 and 2025; and
6. Available as full-text open-access articles.

Exclusion Criteria

Studies were excluded if they:

1. Were editorials, opinion papers, protocols, or reviews;
2. Did not report numerical blood pressure data;
3. Evaluated interventions unrelated to the physiological mechanisms of hypertension (e.g., non-back massage techniques without relevance);
4. Involved populations other than hypertensive patients; or
5. Demonstrated poor reporting quality, such as incomplete data or unclear analytic methods.

Study Selection (PRISMA Process)

During the Identification phase, a total of 312 records were retrieved (PubMed = 86; ScienceDirect = 74; Scopus = 48; Wiley = 22; Google Scholar and nursing portals = 82). After automatic and manual deduplication, 97 duplicates were removed, leaving 215 unique records. In the Screening phase, titles and abstracts were reviewed, resulting in the exclusion of 146 records due to irrelevance (non-hypertensive populations, settings outside emergency/acute units, interventions unrelated to back massage or music relaxation, or non-interventional designs). A total of 69 records proceeded to full-text assessment. A total of 69 records proceeded to full-text assessment.

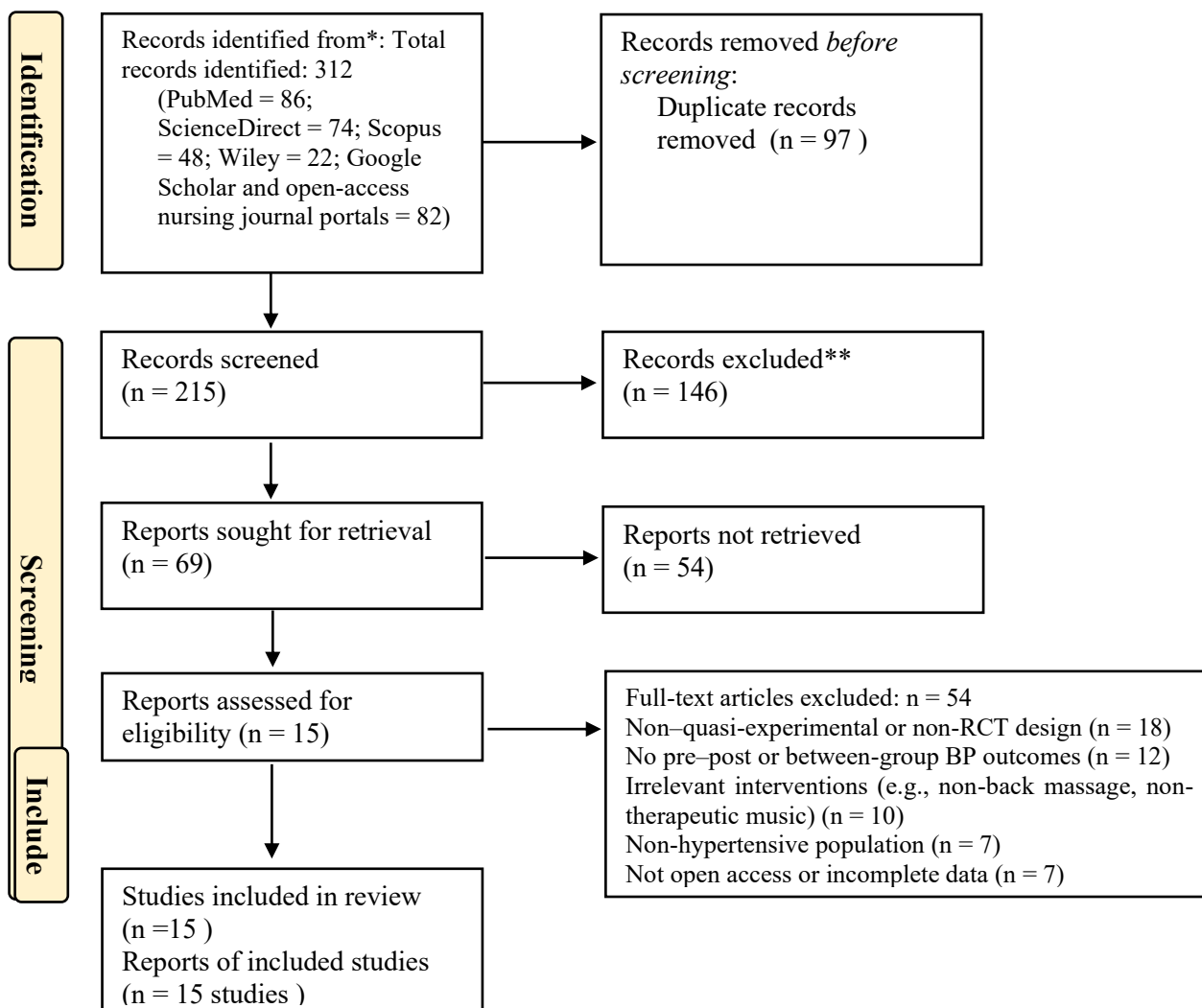


Figure 1. PRISMA Flowchart (2020 version)

During the Eligibility phase, 54 articles were excluded for the following reasons: non-quasi-experimental/RCT design (n = 18), absence of pre–post or comparative blood pressure outcomes (n = 12), inappropriate interventions (e.g., massage of other body parts or non-therapeutic music; n = 10), non-hypertensive populations (n = 7), and restricted access or incomplete data (n = 7). Finally, 15 studies met all inclusion criteria and were included in the narrative synthesis. These studies comprised quasi-experimental and randomized controlled designs, reported measurable blood pressure outcomes, and examined back massage, music relaxation, or combined interventions among hypertensive patients in acute or emergency care contexts. A PRISMA flow diagram was developed to document each selection stage, ensuring transparency and reproducibility.

Quality Appraisal

The methodological quality of quasi-experimental studies was assessed using the JBI Critical Appraisal Checklist, whereas randomized controlled trials (RCTs) were evaluated using the Risk of Bias 2 (RoB 2) tool. Each article was independently appraised by two reviewers, and discrepancies were resolved through discussion or consultation with a third reviewer. Appraisal domains included clarity of allocation procedures, blinding, completeness of outcome data, and appropriateness of statistical analysis. Studies were categorized as high, moderate, or low quality, and findings were synthesized with consideration of each study’s potential sources of bias.

RESULT

Most studies included in this review were rated as moderate to high quality, indicating a generally acceptable level of methodological rigor. High-quality studies typically demonstrated standardized intervention procedures, clearly reported blood pressure outcomes, and appropriate statistical analyses. In contrast, studies classified as moderate quality frequently lacked blinding, provided insufficient detail regarding randomization procedures, had relatively small sample sizes, or inadequately controlled for confounding factors such as antihypertensive medication use and comorbid conditions. Despite these limitations, the overall body of evidence consistently suggests that back massage and music relaxation contribute to reductions in blood pressure. Accordingly, the findings of this review can be considered reasonably reliable, while still requiring cautious interpretation. Future studies particularly rigorously designed RCTs with larger sample sizes and standardized protocols are warranted to strengthen causal inference and enhance generalizability.

Table 1.
Quality Categories (JBI)

No	Author (Year)	Design	JBI Items Met	Brief Critical Notes	Category
1	Syah (2020)	Quasi-exp	8/9	Clear control group; adequate pre–post analysis	High
2	Ups Ropei et al. (2025)	Quasi-exp	7/9	Randomization not described; no blinding	Moderate
3	Yusamto et al. (2025)	Quasi-exp	8/9	Standardized intervention procedures; complete data	High
4	Patonengan et al. (2023)	Quasi-exp	7/9	Limited control of confounders (medication/comorbidities)	Moderate
5	Sureerat Na Wichian et al. (2025)	Quasi-exp	7/9	Non-probability sampling	Moderate
6	Zinat Mohebbi et al. (2024)	RCT	9/10	Adequate randomization and allocation concealment	High
7	Sureerat Na Wichian et al. (2021)	RCT	8/10	High heterogeneity; transparent RoB reporting	High
8	Genisa et al. (2023)	Quasi-exp	6/9	Small sample; no control group	Moderate
9	Yunita et al. (2024)	Quasi-exp	7/9	Control group present; blinding not feasible	Moderate
10	Arifah et al. (2023)	Quasi-exp	7/9	Clear outcomes; limited control of confounders	Moderate
11	Hartutik & Suratih (2017)	Quasi-exp	8/9	Adequate statistical analysis	High
12	Kusuma et al. (2025)	Pre-exp	6/9	No control group; complete reporting	Moderate
13	Hendra Irawan et al. (2024)	Pre-exp	6/9	Single-group design; limited internal validity	Moderate
14	Syapitri et al. (2025)	Quasi-exp	7/9	Reliable outcome measurement	Moderate
15	Syah (2020)	RCT	8/10	Appropriate study selection; publication bias addressed	High

Table 2.
Characteristics and Key Findings of Included Studies

Study Title	Authors (Year)	Objective	Design/ Methods	Sample	Main Findings	Identified Gaps	Country
Effect of Back Massage on Blood Pressure in Hypertensive Patients	Syah (2020)	To examine the effect of back massage on blood pressure	Quasi-experimental, pretest–posttest with control group	54 hypertensive patients	Significant reductions in systolic and diastolic BP	Did not evaluate pain; conducted in general clinical setting	Indonesia
Effect of Autogenic Relaxation Combined with Mozart Music on Blood Pressure Reduction Among Hypertensive Patients	Ups Ropei et al. (2025)	To assess the combined effects of relaxation and music on BP	Quasi-experimental, pretest–posttest	36 hypertensive respondents	Significant reductions in SBP and DBP	Music limited to one genre; no assessment of pain	Indonesia
The Impact of Slow Stroke Back Massage on Blood Pressure and Pulse in Hypertensive Patients Aged 45–54 Years	Yusanto et al. (2025)	To test slow-stroke back massage on BP and pulse	Quasi-experimental, pretest–posttest	30 hypertensive respondents	Significant decrease in BP	No combination with music therapy	Indonesia
Effectiveness of Slow Stroke Back Massage on Blood Pressure, Anxiety, and Depression Among Older People with Hypertension	Patonengan et al. (2023)	To evaluate effects on BP and psychological outcomes	Quasi-experimental, pre/post control group	50 older adults	Reduced BP and anxiety/depression	Pain not measured	Indonesia
Effects of Music Embedded with Binaural and Superimposed Beats in Controlling Hypertension in Older Adults	Sureerat Na Wichian et al. (2025)	To examine music with binaural beats on BP	Quasi-experimental	52 older adults with hypertension	Significant BP reduction vs. control	No combination with massage	Thailand
The Effect of Back Massage on Blood Pressure in Patients with Primary Hypertension: A Randomized Clinical Trial	Zinat Mohebbi et al. (2024)	To evaluate back massage on BP	Randomized clinical trial (non-blind)	80 patients	Significant reduction in BP	Heterogeneous age; no music component	Iran
Effects of Music Embedded	Sureerat Na Wichian et al.	To synthesize RCTs on music	Meta-analysis of RCTs	26 studies	Reduced SBP/DBP and anxiety	Considerable heterogeneity across studies	Thailand

Study Title	Authors (Year)	Objective	Design/Methods	Sample	Main Findings	Identified Gaps	Country
with Binaural and Superimposed Beats Controlling Hypertension in Older Adults: A Meta-analysis	al. (2021)	therapy in hypertension					
Effect of Classical Music Therapy and Deep Breathing on Blood Pressure in Hypertensive Patients	Genisa et al. (2023)	To assess classical music and relaxation	Quasi-experimental, one-group	15 respondents	Significant BP reduction	Small sample size	Indonesia
Reduction of Pain and Blood Pressure Among Elderly with Hypertension Through Progressive Muscle Relaxation and Religious Music	Yunita et al. (2024)	To evaluate music plus relaxation in elderly	Quasi-experimental	NR	Reduced BP and pain	Limited to elderly population	Indonesia
Effect of Foot Reflexology Massage on Blood Pressure in Hypertensive Patients	Arifah et al. (2023)	To assess foot reflexology effects on BP	Quasi-experimental, pretest–posttest control	20 hypertensive patients	Significant BP reduction	Focus on foot reflexology, not back massage	Indonesia
Effect of Foot Reflexology Massage on Primary Hypertension	Hartutik & Suratih (2021)	To examine foot reflexology on BP	Quasi-experimental, pre–post	74 elderly patients	Significant BP reduction	Focus on foot massage	Indonesia
Effect of Light Massage and Foot Reflexology on Blood Pressure Reduction Among Hypertensive Patients	Kusuma et al. (2025)	To test light massage and reflexology	Pre-experimental	34 hypertensive patients	Significant BP decline	No evaluation of music therapy	Indonesia
Effect of Progressive Muscle Relaxation Combined with Back Massage on Blood Pressure	Hendra Irawan et al. (2024)	To assess back massage plus relaxation	Pre-experimental	NR	Relaxation contributed to BP reduction	No music intervention measured	Indonesia
Effect of Autogenic Relaxation on	Syapitri et al. (2025)	To evaluate autogenic relaxation	Quasi-experimental	40 hypertensive patients	Significant BP reduction	No added music component	Indonesia

Study Title	Authors (Year)	Objective	Design/Methods	Sample	Main Findings	Identified Gaps	Country
Blood Pressure in Hypertensive Patients	Liao et al. (2021)	To synthesize massage effects	Meta-analysis of RCTs	15 trials	Massage significantly reduced BP	Not specific to back massage or music	Taiwan

DISCUSSION

Overall, the evidence synthesized in this review indicates that back massage and music therapy are effective non-pharmacological interventions for reducing both systolic and diastolic blood pressure among patients with hypertension. Consistent reductions in blood pressure were observed across studies employing quasi-experimental designs as well as randomized controlled trials, suggesting a broadly reproducible effect despite methodological variation (Syah, 2020; Mohebbi et al., 2024). Interventions incorporating relaxation music, either alone or in combination with massage, demonstrated favorable outcomes across different age groups, further supporting the clinical relevance of complementary therapies in hypertension management (Ups Ropei et al., 2025; Sureerat Na Wichian et al., 2025).

From a physiological perspective, back massage is proposed to enhance parasympathetic nervous system activity, reduce muscular tension, and suppress catecholamine release, thereby promoting vasodilation and lowering blood pressure (Yusanto et al., 2025). Music therapy contributes through psychological pathways, including anxiety reduction, emotional stabilization, and modulation of heart rate variability (Genisa et al., 2023). When combined, these interventions may exert synergistic effects via interconnected neuroendocrine, psychological, and hemodynamic mechanisms, resulting in more stable blood pressure responses (Patonengan et al., 2023; Liao et al., 2021).

Importantly, the reviewed studies emphasize that back massage and music therapy should not be considered substitutes for pharmacological antihypertensive treatment, but rather adjunctive interventions that enhance patient comfort and support blood pressure stabilization, particularly among older adults and individuals experiencing heightened anxiety (Yunita et al., 2024). Several trials reported more stable blood pressure trajectories in participants receiving complementary interventions compared with control groups, underscoring their potential supportive role in comprehensive hypertension care (Zinat Mohebbi et al., 2024).

Nevertheless, the magnitude and consistency of intervention effects are influenced by substantial heterogeneity in intervention “dose”, including variations in session duration (ranging from 10 to 20 minutes), frequency, massage techniques, and types of music employed. This heterogeneity complicates direct cross-study comparisons and limits the ability to identify optimal intervention parameters (Kusuma et al., 2025; Syapitri et al., 2025). The lack of standardized protocols remains a significant barrier to replicability and widespread clinical implementation. Psychological factors appear to play a critical mediating role, as reductions in blood pressure frequently coincided with decreases in anxiety and perceived stress levels (Patonengan et al., 2023; Sureerat Na Wichian et al., 2021). Studies that did not assess psychological outcomes may therefore underestimate or incompletely explain the mechanisms underlying observed physiological benefits.

Despite generally positive findings, this review identifies several important limitations of the existing evidence base. First, many included studies employed quasi-experimental designs without

full randomization, increasing susceptibility to selection bias and limiting causal inference (Arifah et al., 2023; Hartutik & Suratih, 2017). Second, sample sizes were often small, reducing statistical power. Third, clinical heterogeneity such as differences in participant age, comorbidities, baseline blood pressure, and concurrent pharmacological therapy was not consistently controlled, thereby constraining the generalizability of results across broader hypertensive populations. Fourth, outcome assessment was largely limited to short-term blood pressure changes, with few studies evaluating long-term outcomes such as sustained blood pressure control, adherence, quality of life, or cardiovascular events.

Collectively, these limitations necessitate cautious interpretation of the findings and highlight the need for well-designed randomized controlled trials, standardized intervention protocols, and comprehensive outcome measures. Nonetheless, given their feasibility, low cost, and safety profile, back massage and music therapy represent promising evidence-based nursing interventions that can be integrated into inpatient care, primary healthcare settings, and community-based hypertension management programs with minimal additional burden on healthcare providers (Hendra Irawan et al., 2024).

CONCLUSION

The literature indicates that back massage and relaxation music produce meaningful reductions in blood pressure among patients with hypertension. These interventions are safe, cost-effective, and suitable as components of comprehensive care. However, stronger clinical evidence particularly from well-designed randomized trials employing standardized protocols and longer follow-ups needed to inform routine implementation and optimize clinical guidance.

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