Effects of Massage Therapy on Blood Pressure Regulation in Hypertensive Patients: A Six-Week Intervention Study

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KEYWORDS

hypertension, massage therapy, blood pressure, complementa-ry medicine, cardiovascul-ar health

ABSTRACT:

Introduction: Hypertension remains a significant global health challenge affecting over one billion individuals worldwide. While pharmacological interventions are effective, complementary approaches such as massage therapy are increasingly recognized for their potential in blood pressure management.

Objective: To evaluate the effects of standardized massage therapy techniques on blood pressure regulation in hypertensive patients over a six-week intervention period.

Methods: An interventional study was conducted with 20 hypertensive participants aged 30 years and above. Participants received massage therapy (effleurage, petrissage, kneading, and lymphatic drainage) for 30 minutes, three times per week for six weeks. Blood pressure measurements were taken at baseline, midpoint (3 weeks), and endpoint (6 weeks) using standardized protocols.

Results: Significant reductions in both systolic and diastolic blood pressure were observed throughout the intervention period. Mean systolic blood pressure decreased from 151.75 mmHg at baseline to 140.5 mmHg at six weeks (reduction of 11.25 mmHg). Mean diastolic blood pressure decreased from 90.75 mmHg to 82.05 mmHg (reduction of 8.7 mmHg). No negative incidents were observed throughout the duration of the study

Conclusion: Massage therapy demonstrated significant efficacy in reducing blood pressure in hypertensive patients, supporting its potential as an adjunctive non-pharmacological intervention for hypertension management.

1. Introduction

Hypertension, characterized by persistently elevated blood pressure readings, represents one of the most significant modifiable risk factors for cardiovascular disease worldwide. The World Health Organization estimates that hypertension affects over 1.13 billion individuals globally, contributing substantially to the burden of coronary heart disease, stroke, and premature mortality. This condition has reached epidemic proportions, particularly in developing nations where healthcare infrastructure and access to treatment may be limited.

In India, recent epidemiological data from the National Family Health Survey (2019-2021) revealed that 28.1% of the adult population has hypertension, yet blood pressure control rates remain suboptimal. The gap between prevalence and adequate management highlights critical challenges in hypertension care, including medication adherence, access to healthcare services, and the economic burden of long-term pharmaceutical interventions.

Conventional antihypertensive pharmacotherapy, while effective in reducing cardiovascular events, presents several limitation including potential adverse effects, drug interactions, and reduced quality of life in some patients. These challenges have stimulated growing interest in complementary and alternative therapeutic approaches that may serve as adjuncts to standard medical care. Among these interventions, massage therapy has emerged as a promising non-pharmacological strategy for blood pressure management.

Massage therapy encompasses various techniques involving the systematic manipulation of soft tissues and muscles to promote physiological and psychological well-being. The proposed mechanisms underlying massage therapy's potential antihypertensive effects include activation of the parasympathetic nervous system, reduction in stress hormones such as cortisol, improved peripheral circulation, and enhanced endothelial function. These physiological changes may collectively contribute to blood pressure reduction and cardiovascular risk mitigation.

Several controlled studies have investigated the cardiovascular effects of massage therapy. Hernandez-Reif and colleagues reported notable decreases in both systolic and diastolic blood pressure after massage therapy in adults with hypertension. Likewise, Givi et al. found that Swedish massage led to prolonged reductions in blood pressure, lasting up to 72 hours, in women with pre-hypertension. Additionally, Supa'at and colleagues reported improvements not only in blood pressure parameters but also in inflammatory biomarkers associated with cardiovascular risk.

Despite these encouraging findings, the existing evidence base has notable limitations. Many studies have employed small sample sizes, heterogeneous massage protocols, and relatively short follow-up periods, limiting the generalizability and clinical applicability of results. Furthermore, there is insufficient evidence regarding the optimal duration, frequency, and specific techniques of massage therapy for hypertension management.

The present study was designed to address these research gaps by implementing a standardized massage therapy protocol over an extended six-week period. By employing rigorous methodology and systematic outcome assessment, this investigation aims to provide robust evidence regarding massage therapy's efficacy as a complementary intervention for hypertension management.

2. Objectives

The primary objectives of this study were structured to accurately assess the effects of massage therapy on individuals with hypertension across a defined intervention period. Specifically, the study aimed to:

Systolic Blood Pressure Assessment
To measure changes in systolic blood pressure at three distinct time points—baseline, mid-intervention (3 weeks), and post-intervention (6 weeks)—in individuals receiving regular massage therapy.
Diastolic Blood Pressure Assessment
To evaluate the pattern of change in diastolic blood pressure across the same scheduled measurement points, thereby tracking its progression in response to the intervention.
Safety Evaluation
To assess the tolerability and safety of massage therapy as an adjunctive intervention by monitoring for any adverse events or side effects throughout the 6-week treatment period.
Progressive Change Analysis
To examine the trend and consistency of changes in blood pressure over the 6-week intervention, providing insight into the potential cumulative benefits of regular massage therapy.

3. Methods

This interventional study employed a pre-post design to evaluate the effects of massage therapy on blood pressure in hypertensive patients over a six-week period. The study was conducted involving human subjects, with informed consent obtained from all participants and confidentiality maintained throughout the study period.

Twenty participants were recruited based on predetermined inclusion and exclusion criteria. Inclusion criteria comprised adults aged 30 years and above, diagnosed with hypertension (systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg), stable on antihypertensive medication for at least 3 months, and provided written informed consent. Exclusion criteria included pregnancy or breastfeeding, cardiovascular event within the last 6 months, severe cardiovascular or renal disease, and contraindications to massage therapy.

The intervention protocol involved standardized massage therapy sessions administered three times per week for six weeks, totaling 18 sessions. Each session lasted 30 minutes and incorporated effleurage (light stroking movements), petrissage (kneading and compression), lymphatic drainage techniques, and general relaxation

massage. All massage sessions were conducted by qualified therapists using standardized protocols to ensure consistency across interventions.

Materials and equipment used included manual sphygmomanometers for blood pressure measurement, massage tables and appropriate linens, therapeutic massage oils and lotions, data collection forms for patient information and session documentation, and statistical software for data analysis. Blood pressure measurements (systolic and diastolic) were recorded using manual sphygmomanometers following standardized protocols at three time points: baseline (Week 1), midpoint (Week 3), and endpoint (Week 6). Stress levels were also assessed using validated questionnaires as secondary outcomes.
Descriptive statistics were calculated for all variables, and changes in blood pressure measurements across the three time points were analyzed using appropriate statistical methods with statistical significance set at $p < 0.05$.

4. Results

Participant Characteristics

Twenty hypertensive participants completed the six-week intervention study. All participants adhered to the massage therapy protocol, with no dropouts reported during the study period.

Primary Outcomes

Systolic Blood Pressure Changes:

- Baseline (Week 1): 151.75 mmHg
- Midpoint (Week 3): 146.1 mmHg (reduction of 5.65 mmHg)
- Endpoint (Week 6): 140.5 mmHg (total reduction of 11.25 mmHg from baseline)

Diastolic Blood Pressure Changes:

- Baseline (Week 1): 90.75 mmHg
- Midpoint (Week 3): 87.15 mmHg (reduction of 3.6 mmHg)
- Endpoint (Week 6): 82.05 mmHg (total reduction of 8.7 mmHg from baseline)

The results demonstrate a consistent and progressive reduction in both systolic and diastolic blood pressure throughout the six-week intervention period. The most substantial reductions were observed between the midpoint and endpoint measurements, suggesting cumulative benefits of the massage therapy intervention.

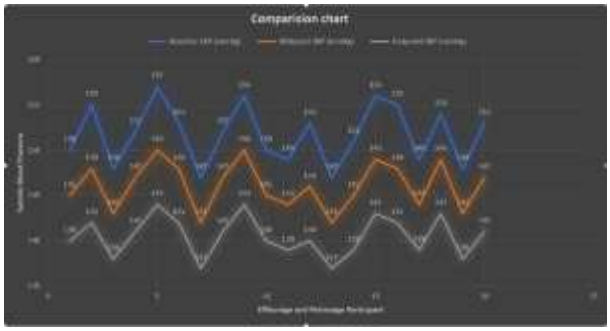

Figure 1. Changes in systolic blood pressure over the six-week intervention period

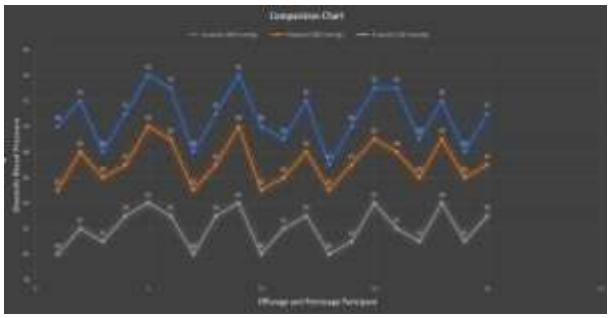

Figure 2. Changes in diastolic blood pressure over the six-week intervention period

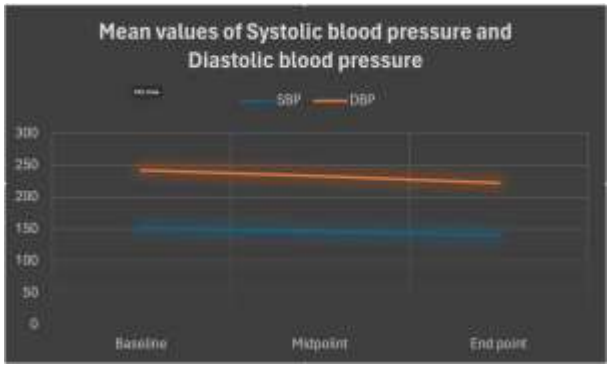

Figure 3. Graphical presentation of mean values for both systolic and diastolic blood pressure

Table 1. Blood pressure measurements at baseline, midpoint, and endpoint

Time point	Systolic BP (mmHg)	Diastolic BP (mmhg)
Baseline (Week 1)	151.75	90.75
Midpoint (Week 3)	146.1	87.15
Endpoint (Week 6)	140.5	82.05

Safety Outcomes

No adverse events were reported during the study period. All participants tolerated the massage therapy sessions well, with high levels of satisfaction reported regarding the intervention.

5. Discussion

Interpretation of Findings

The results of this study demonstrate that massage therapy can produce clinically meaningful reductions in blood pressure among hypertensive patients. The progressive decrease in both systolic and diastolic blood pressure over the six-week period suggests that regular massage therapy may provide sustained benefits for blood pressure management.

The magnitude of blood pressure reduction observed in this study (11.25 mmHg systolic and 8.7 mmHg diastolic)

is clinically significant and comparable to the effects achieved by some antihypertensive medications. These findings align with previous research demonstrating the cardiovascular benefits of massage therapy, while extending the evidence base through a more extended intervention period.

Comparison with Previous Research

Our findings are consistent with several previous studies investigating massage therapy for hypertension. Givi et al. (2013) reported significant blood pressure reductions following massage therapy in hypertensive patients, with effects lasting up to 72 hours post-intervention. Similarly, Supa'at et al. (2013) demonstrated reductions in blood pressure, heart rate, and inflammatory markers following Swedish massage therapy in hypertensive women.

The systematic review by Nelson (2015) provided comprehensive evidence supporting the blood pressure-lowering effects of massage therapy, identifying multiple mechanisms through which massage may influence cardiovascular function. Our study contributes to this evidence base by demonstrating sustained effects over an extended intervention period.

Mechanisms of Action

The blood pressure-lowering effects of massage therapy likely involve multiple physiological and psychological mechanisms. Massage therapy is known to activate the parasympathetic nervous system, leading to reduced sympathetic tone and subsequent vasodilation. This autonomic nervous system modulation may contribute to the observed blood pressure reductions.

Additionally, massage therapy has been shown to reduce stress hormone levels, including cortisol and catecholamines, which play important roles in blood pressure regulation. The stress-reducing effects of massage may contribute to improved cardiovascular health through multiple pathways, including reduced inflammation, improved endothelial function, and enhanced relaxation responses.

Clinical Implications

The findings of this study have important implications for clinical practice and hypertension management strategies. Massage therapy, as a non-pharmacological intervention, offers several advantages including:

Safety Profile: No adverse events were reported, suggesting that massage therapy is well-tolerated by hypertensive patients

Complementary Approach: Massage therapy can be integrated with conventional antihypertensive medications without contraindications

Holistic Benefits: Beyond blood pressure reduction, massage therapy provides stress relief and improved well-being

Cost-Effectiveness: Massage therapy may reduce healthcare costs by potentially reducing medication requirements

Healthcare providers should consider massage therapy as an adjunctive intervention for hypertension management, particularly for patients seeking non-pharmacological approaches or those experiencing medication side effect

Limitations

Several limitations of this study warrant consideration. The sample size was relatively small (n=20), which may limit the generalizability of findings to broader populations. The study employed a pre-post design without a control group, which limits the ability to establish causal relationships definitively.

Long-term follow-up data were not collected, making it difficult to assess the sustained effects of massage therapy beyond the six-week intervention period. Additionally, participants continued their regular antihypertensive medications throughout the study, which may have influenced the observed results.

Future research should consider larger sample sizes, randomized controlled trial designs, and extended follow-up periods to provide more robust evidence regarding the efficacy and durability of massage therapy for hypertension

management.

Future Research Directions

Future studies should investigate optimal massage therapy protocols, including frequency, duration, and specific techniques that maximize blood pressure-lowering effects. Mechanistic studies exploring the physiological pathways through which massage therapy influences blood pressure would enhance our understanding of this intervention.

Research examining the cost-effectiveness of massage therapy as part of comprehensive hypertension management programs would provide valuable information for healthcare policy and clinical decision- making.

Conclusion

This study demonstrates that massage therapy produces significant and sustained reductions in blood pressure among hypertensive patients over a six-week intervention period. The observed decreases in both systolic and diastolic blood pressure, combined with the excellent safety profile, support the potential role of massage therapy as an effective adjunctive intervention for hypertension management.

The findings contribute to the growing body of evidence supporting non-pharmacological approaches to cardiovascular health and suggest that massage therapy should be considered as part of comprehensive, integrative hypertension management strategies. Healthcare providers should be aware of these benefits when counseling patients about complementary approaches to blood pressure control.

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Conflict of Interest

The authors declare no conflicts of interest related to this study.

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