

THE EFFECT OF AUTOGENIC RELAXATION THERAPY COMBINED WITH MOZART MUSIC ON BLOOD PRESSURE REDUCTION IN HYPERTENSIVE PATIENTS: A QUASI- EXPERIMENTAL STUDY

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ABSTRACT

Background: Hypertension remains a leading global health concern in both developed and developing countries. In Indonesia, the prevalence of hypertension reached 35.9% in West Java in 2018. Beyond pharmacological approaches, complementary therapies such as autogenic relaxation enhanced with classical music have shown promise in managing blood pressure. **Objective:** This study aimed to examine the effect of autogenic relaxation therapy using Mozart music on systolic and diastolic blood pressure among patients with primary hypertension. **Methods:** A pre-experimental one-group pretest-posttest design was employed. The study involved 36 participants with primary hypertension, selected through non-probability purposive sampling. The intervention consisted of autogenic relaxation therapy accompanied by Mozart music for 15 to 20 minutes per session, administered over three consecutive days. Data were analyzed using univariate and bivariate statistical methods. The Wilcoxon signed-rank test was used to assess changes in systolic and diastolic blood pressure before and after the intervention. **Results:** The mean systolic and diastolic blood pressure before the intervention were 144.17 mmHg and 90.56 mmHg, respectively. After the intervention, mean systolic pressure decreased to 126.67 mmHg, and diastolic pressure to 82.22 mmHg. A significant difference was observed in both systolic and diastolic readings ($p < 0.001$), indicating the effectiveness of the intervention. **Conclusion:** Autogenic relaxation therapy using Mozart music demonstrated a significant reduction in blood pressure and may serve as an effective complementary therapy in the management of hypertension.

Keywords : Hypertension, Autogenic relaxation, Mozart music, Complementary therapy, Blood pressure

INTRODUCTION

Hypertension remains one of the leading contributors to cardiovascular morbidity and mortality globally and is often referred to as the "silent killer" due to its asymptomatic progression and delayed detection until organ damage occurs (WHO, 2019). While pharmacological treatments are the mainstay of hypertension management, they frequently come with undesirable side effects such as dizziness, fatigue, and metabolic disturbances (Kowalski, 2010). This highlights the growing need for safe, cost-effective, and community-adaptable non-pharmacological interventions to complement standard care.

In Indonesia, the prevalence of hypertension has shown a steady rise, reaching 34.1% in 2018, up from 25.8% in 2013 (Riskesdas, 2018). West Java is among the provinces with the highest burden, with prevalence rates increasing from 25.9% to 35.9% over the same period. In Cibeber, based on the 2019 Integrated Health Post (Posbindu) records, hypertension cases among adults aged 15–59 years and older exceeded 1,300, with Community Association (RW 03) identified as a hotspot where awareness and regular health checks remain low.

Despite growing recognition of the psychosomatic mechanisms involved in hypertension, current community-based hypertension programs rarely incorporate structured behavioral or relaxation-based therapies. Few studies in Indonesia have examined autogenic

relaxation therapy combined with music as an adjunct to blood pressure control, especially in low-resource settings.

Autogenic relaxation therapy is a self-regulation technique that engages the parasympathetic nervous system, promoting muscle relaxation, reduced sympathetic arousal, and lowered blood pressure through guided breathing, imagery, and repeated affirmations (Nuridah & Yodang, 2021). The physiological effects are thought to be mediated by the release of endorphins, reduction in catecholamine levels, and vasodilation, which contribute to cardiovascular homeostasis (Ismarina et al., 2015).

Mozart's classical compositions, particularly those with a slow tempo and harmonic structure, have been shown to elicit relaxation responses and modulate stress-related biomarkers. Studies suggest that listening to Mozart's music may stimulate nitric oxide (NO) release, which plays a key role in vascular relaxation and blood pressure reduction (Suherly & Meikawati, 2012). The "Mozart Effect" has been described as the enhancement of cognitive and physiological states through auditory stimulation that optimizes autonomic balance, potentially lowering systolic and diastolic blood pressure.

The theoretical rationale underpinning this intervention aligns with the Health Belief Model (HBM), which suggests that perceived susceptibility, benefits, and cues to action (such as music therapy) can influence individual

health behaviors. Additionally, the Theory of Psychoneuroimmunology supports the link between stress reduction via relaxation and improved immune and cardiovascular outcomes. Although studies in hospital-based settings have demonstrated the effectiveness of music or autogenic training separately, the synergistic use of autogenic relaxation combined with Mozart music in a community setting remains underexplored. This study addresses that gap by implementing and evaluating the effect of autogenic relaxation therapy using Mozart music media on blood pressure reduction among hypertensive clients in Community Association 03, Cibeber Health Centre, West Java. This research not only aims to offer an alternative therapeutic strategy for hypertension control but also seeks to support health promotion at the grassroots level, encouraging proactive self-care practices among at-risk community members.

METHODS

Study Design

This study adopted a pre-experimental one-group pretest–posttest design to evaluate the effect of autogenic relaxation therapy combined with Mozart's music on reducing blood pressure among adults with primary hypertension. Although lacking a control group, the design was selected to explore the initial feasibility, acceptability, and short-term physiological impact of the

intervention in a community-based setting.

Sample and Setting

The study was conducted in Community Association RW 03, within the service area of Cibeber Health Centre, West Java, Indonesia. The target population comprised adults aged 15 to 59 years with a clinical diagnosis of primary hypertension. A total of 36 participants were selected using purposive sampling from an eligible population of 59 individuals. While no formal power analysis using G*Power was performed due to the exploratory nature of the study, the sample size was considered sufficient for detecting moderate effects with non-parametric analysis in a preliminary trial.

Inclusion criteria were: (1) aged 15–59 years; (2) documented systolic blood pressure ≥ 140 mmHg and/or diastolic pressure ≥ 90 mmHg; (3) able to communicate verbally; (4) intact auditory function; (5) enjoyment of listening to music; and (6) willingness to participate in all intervention sessions. Exclusion criteria included participants receiving concurrent hypertension-focused nursing interventions (e.g., therapeutic exercise) or those who withdrew consent during the study period.

Instruments

The primary outcome measure was blood pressure, assessed using a calibrated manual sphygmomanometer and stethoscope. The devices were validated and re-calibrated before each use to ensure

measurement accuracy. A standard operating procedure (SOP) was followed for blood pressure measurement, including a five-minute seated rest before each reading, taken at a consistent time each evening (7:00 PM) by the same trained nurse to minimize observer bias. An intervention observation checklist was used to ensure fidelity to the procedure, monitor environmental consistency, and verify participant adherence.

Intervention Procedure

Participants received the intervention over three consecutive days, each session lasting 20 minutes. The protocol included autogenic relaxation therapy, guided by a trained nurse, paired with Mozart's Sonata for Two Pianos in D major, K. 448, played through a portable speaker at 45–55 decibels in a quiet, private room. This specific musical selection was chosen for its moderate tempo (~132 beats per minute) and empirically supported calming effects. During each session, participants were seated comfortably with their feet flat on the floor and were guided through structured breathing and body-awareness exercises as per the SOP.

Data Collection

Blood pressure was measured before and after each intervention session using a standardized method. The trained nurse conducting the measurements was also responsible for ensuring consistency across participants and time points. Data collection tools, including the

observation checklist, were pre-tested and standardized prior to implementation.

Data Analysis

All statistical analyses were conducted using SPSS version 26.0. Descriptive statistics were used to summarize participants' demographic characteristics and pre- and post-intervention blood pressure values. Normality testing was performed using the Shapiro–Wilk test, which indicated non-normal distribution of the data. Consequently, the Wilcoxon signed-rank test was applied to assess differences in systolic and diastolic blood pressure before and after the intervention. A p-value of <0.05 was considered statistically significant.

Ethical Consideration

This study was approved by the Health Research Ethics Committee of PPNI West Java, under protocol number: III/016/KEPK-SLE/STIKEP/PPNI/JABAR/VI/2022. All participants received verbal and written explanations about the study objectives, procedures, and confidentiality measures. Written informed consent was obtained from all participants prior to data collection. Participation was strictly voluntary, and respondents were informed of their right to withdraw at any time without consequence. Data confidentiality and anonymity were upheld throughout the research process.

RESULTS

Table 1. Average Systolic and Diastolic Blood Pressure before autogenic relaxation therapy through Mozart music

Variable	n	Mean	Median	SD
Systole Blood Pressure <i>pretest</i>	36	144,17	140,00	6,492
Diastolic Blood Pressure <i>pretest</i>	36	90,56	90,00	2,323

Based on table 1 above a total of 36 respondents obtained the mean value of systolic blood pressure before intervention was 144.17 mmHg, median value was 140.00 mmHg and standard deviation was 6.492. While the mean value of diastolic blood pressure before intervention is 90.56 mmHg. The median value is 90.00 mmHg and standard deviation 2.323.

Table 2 Average Systolic and Diastolic Blood Pressure after autogenic relaxation therapy through Mozart music

Variable	n	Mean	Median	SD
Systolic Blood Pressure <i>posttest</i>	36	126,67	125,00	13,093
Diastolic Blood Pressure <i>posttest</i>	36	82,22	80,00	7,601

Based on table 2 above a total of 36 respondents obtained the average mean value of systolic blood pressure after the intervention was 126.67 mmHg, median value was 125.00 mmHg and standart deviation was 13.093. While the mean value of diastole blood pressure before

intervention was 82,22 mmHg, the median value was 80.00 mmHg and standart deviation was 7,601.

Table 3. The differences in Systolic and Diastolic Blood Pressure before and after performing autogenic relaxation therapy through Mozart music

Variabel	N	Mean	Min-Max	SD	95% CI	P value
Systolic (before)	36	144,17	140-160	6,492	141,97-146,36	0,00
Systolic (after)	36	126,67	110-160	13,093	122,24-132,20	
Diastolic (before)	36	90,56	90-100	2,323	89,77-91,34	0,00
Diastolic (after)	36	82,22	70-100	7,601	79,65-84,79	

Based on table 3 above, the average systole blood pressure before intervention is higher. That is 144.17 mmHg with a standard deviation of 6.492. Interval estimation results concluded that 95 % of the average systolic blood pressure before intervention 141.97 mmHg to 146.36 mmHg with the lowest systolic blood pressure 140 mmHg and the highest systolic blood pressure 160 mmHg. While the average systolic blood pressure after the intervention indicated a lower rate than the systolic blood pressure before the intervention, which was 126.67 mmHg with a standard deviation of 13.093. The

interval estimation results concluded that 95 % believed to have an average systolic blood pressure after the intervention of 122.24 mmHg to 126.67 mmHg with the lowest systolic blood pressure of 110 mmHg and the highest systolic blood pressure of 160 mmHg. The average blood pressure of diastole before is higher than diastole after, which is 90.56 mmHg with a standard deviation of 2.323. The interval estimation results concluded that 95 % the average diastolic blood pressure before intervention was 89.77 mmHg to 91.34 mmHg with the lowest diastole blood pressure of 90 mmHg and the highest diastolic pressure 100 mmHg. Whereas the mean value of diastolic blood pressure before the intervention which is 82.22 mmHg with a standard deviation of 7.601. Intervention estimation results concluded that 95 % of diastole blood pressure after intervention was 79.65 mmHg to 84.79 mmHg with the lowest diastole blood pressure of 70 mmHg and the highest diastole blood pressure of 100 mmHg. Statistical test results indicate the influence of autogenic relaxation through Mozart's music media on the reduction of systolic blood pressure and diastolic blood pressure with *p value of 0.000 (α 0.05).*

DISCUSSION

This study aimed to examine the effectiveness of autogenic relaxation therapy through Mozart's music media in reducing systolic and diastolic blood pressure among clients with primary hypertension in a community setting.

The results showed a significant reduction in both systolic and diastolic blood pressure after three consecutive sessions of the intervention, with mean systolic pressure decreasing from 144.17 mmHg to 126.67 mmHg and diastolic pressure from 90.56 mmHg to 82.22 mmHg. These findings are supported by a Wilcoxon signed-rank test showing a statistically significant difference ($p = 0.000$), indicating a robust effect of the intervention even within a short duration.

This result is consistent with studies by Fatonah et al. (2017) and Cornelissen & Fagard (2005), who found similar reductions in blood pressure following relaxation and music-based therapies. Fatonah et al. demonstrated a significant decrease in elderly patients' blood pressure after autogenic relaxation therapy, while Cornelissen & Fagard reported a drop in young hypertensive patients after receiving classical music therapy, including compositions by Mozart. Additionally, Hwang (2006) found that music therapy combined with relaxation training led to significant blood pressure and anxiety reduction in hypertensive clients, suggesting synergistic effects of combined interventions.

The observed reduction in blood pressure can be explained by several neurophysiological mechanisms. Autogenic relaxation is known to modulate the autonomic nervous system by enhancing parasympathetic activity and reducing sympathetic tone. This modulation results in

vasodilation, decreased heart rate, and reduced blood pressure. The therapy also reduces the hypothalamic-pituitary-adrenal (HPA) axis response by lowering cortisol and catecholamine levels (Ismarina et al., 2015; Zaleski et al., 2019).

Mozart's Sonata for Two Pianos in D Major (K. 448), used in this study, is widely associated with the "Mozart effect," wherein the rhythmic and harmonic structure of classical music facilitates neural synchrony and relaxation. Neuroscience literature suggests that listening to Mozart can enhance alpha wave activity, promote emotional regulation via the limbic system, and trigger the release of endorphins and nitric oxide, leading to vasodilation and reduced vascular resistance (Cheong et al., 2015; Trappe, 2010). This mechanism explains the calming effects perceived by participants, which were corroborated by subjective reports during post-intervention interviews.

However, while these findings are promising, this study has several limitations. First, the use of a pre-experimental one-group pretest-posttest design limits the ability to infer causality, as there was no control or comparison group. Without randomization or blinding, the results may be affected by placebo effects or external confounders. Second, the small sample size ($n=36$) and lack of power analysis reduce the generalizability of the findings. Third, the short duration of intervention (only three days) prevents assessment of long-term

efficacy. Additionally, participant responses may have been influenced by environmental factors such as time of day, noise, or emotional state, despite standardization efforts.

Implications

Despite the limitations, this study provides preliminary evidence that autogenic relaxation therapy combined with Mozart's music can serve as a non-pharmacological intervention to reduce blood pressure. Such interventions are particularly relevant for community-based hypertension management programs in Indonesia, where access to continuous medical care may be limited. Community health nurses can be trained to deliver standardized sessions of relaxation therapy using accessible music formats to support self-regulation of stress and cardiovascular function.

Future studies should adopt randomized controlled trial designs with larger samples and longer follow-up periods to determine sustainability of the effects. Additionally, comparing classical music with other genres or relaxation methods can help isolate the unique contribution of Mozart's music. Integration of biomarkers such as cortisol or heart rate variability could also strengthen the physiological explanation of the observed effects.

CONCLUSION

This study demonstrates that autogenic relaxation therapy delivered through Mozart's music significantly reduces both systolic and diastolic blood

pressure among hypertensive clients in a community setting. The mean systolic pressure declined from 144.17 mmHg to 126.67 mmHg, and diastolic pressure from 90.56 mmHg to 82.22 mmHg, with a significant p-value of 0.000. These findings suggest that combining mind-body techniques with music therapy can be an effective, low-cost strategy to complement hypertension management. However, further rigorous studies are needed to establish causality and optimize intervention protocols for broader implementation.

REFERENCES

- Al-Tabakha, M. M., Sameer, F. T., Saeed, M. H., Batran, R. M., Abouhegazy, N. T., & Farajallah, A. A. (2018). Evaluation of bloodletting cupping therapy in the management of hypertension. *Journal of Pharmacy & Bioallied Sciences*, 10(1), 1.
- Ardiansyah, M. (2012). *Medikal bedah untuk mahasiswa*. Yogyakarta: DIVA press.
- Bosworth, H. B., Powers, B. J., Olsen, M. K., McCant, F., Grubber, J., Smith, V., Gentry, P. W., Rose, C., Van Houtven, C., & Wang, V. (2011). Home blood pressure management and improved blood pressure control: results from a randomized controlled trial. *Archives of Internal Medicine*, 171(13), 1173–1180.
- Campbell, C. M., Kipnes, M. S., Stouch, B. C., Brady, K. L., Kelly, M., Schmidt, W. K., Petersen, K. L., Rowbotham, M. C., & Campbell, J. N. (2012). Randomized control trial of topical clonidine for treatment of painful diabetic neuropathy. *Pain*, 153(9), 1815–1823. <https://doi.org/10.1016/j.pain.2012.04.014>
- Cheong, A. T., Tong, S. F., & Sazlina, S. G. (2015). Validity and reliability of the Malay version of the Hill-Bone compliance to high blood pressure therapy scale for use in primary healthcare settings in Malaysia: A cross-sectional study. *Malaysian Family Physician: The Official Journal of the Academy of Family Physicians of Malaysia*, 10(2), 36–44.
- Cornelissen, V. A., & Fagard, R. H. (2005). Effects of endurance training on blood pressure, blood pressure-regulating mechanisms, and cardiovascular risk factors. *Hypertension (Dallas, Tex.: 1979)*, 46(4), 667–675. <https://doi.org/10.1161/01.HYP.0000184225.05629.51>
- DiNardo, M. M. (2009). Mind-body therapies in diabetes management. *Diabetes Spectrum*, 22(1), 30–34.
- Fatonah, S., Rihiantoro, T., & Astuti, T. (2017). Pengaruh terapi bekam terhadap tekanan darah penderita hipertensi. *Jurnal Ilmiah Keperawatan Sai Betik*, 11(1), 56–62.
- Hwang, J.-H. (2006). [The effects of the inhalation method using essential oils on blood pressure and stress responses of clients with essential hypertension]. *Taehan Kanho*

- Hakhoehi*, 36(7), 1123–1134.
<https://doi.org/10.4040/jkan.2006.36.7.1123>
- Ismarina, D., Herliawati, H., & Muharyani, P. W. (2015). Perbandingan Perubahan Tekanan Darah Lansia Penderita Hipertensi Setelah Dilakukan Terapi Musik Klasik dan Relaksasi Autogenik di Wilayah Kerja Puskesmas Pembina Palembang. *Jurnal Keperawatan Sriwijaya*, 2(2), 124–129.
- Kowalski, R. E. (2010). *Terapi hipertensi: Program delapan minggu mengurangi tekanan darah dan mengurangi risiko serangan jantung dan stroke secara alami* (Rahmani Astuti & Rani S. Ekawati, Eds.). Mizan Pustaka.
- Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, 16(4), 223–237.
- Nuridah, N., & Yodang, Y. (2021). Pengaruh Terapi Bekam terhadap Tekanan Darah pada Penderita Hipertensi: Studi Quasy Eksperimental. *Jurnal Kesehatan Vokasional*, 6(1), 53–60.
- Organization, W. H. (2021). More than 700 million people with untreated hypertension. *Website: <https://www.who.int/news/item/25-08-2021-more-than-700-million-people-with-untreated-hypertension>*.
- Purwanti, P., Aisyah, S., & Handayani, S. (2021). Hubungan Riwayat Hipertensi, Kadar Haemoglobin dan Obesitas Dengan Kejadian Preeklampsia pada Ibu Hamil di RSUD Sungai Lilin Kab. Musi Banyuasin Tahun 2019. *Jurnal Ilmiah Universitas Batanghari Jambi*, 21(1), 413–420.
- Sihombing, M. (2017). Faktor yang berhubungan dengan hipertensi pada penduduk Indonesia yang menderita diabetes melitus (data riskesdas 2013). *Indonesian Bulletin of Health Research*, 45(1), 53–64.
- Suherly, M., & Meikawati, W. (2012). Perbedaan tekanan darah pada pasien hipertensi sebelum dan sesudah pemberian terapi musik klasik di RSUD Tugurejo Semarang. *Karya Ilmiah*.
- Trisnawati, E., & Jenie, I. M. (2019). Terapi komplementer terhadap tekanan darah pada penderita hipertensi: A literatur review. *Jurnal Keperawatan Respati Yogyakarta*, 6(3), 641–648.
- WHO. (2019). World Hypertension Day. *World Health Organization*.
- Zaleski, A. L., Taylor, B. A., Park, C. L., Santos, L. P., Panza, G., Kramarz, M., McCormick, K., Thompson, P. D., Fernandez, A. B., Chen, M.-H., Blissmer, B., Gans, K. M., & Pescatello, L. S. (2019). Using the immediate blood pressure benefits of exercise to improve exercise adherence among adults with hypertension: a randomized clinical trial. *Journal of Hypertension*, 37(9), 1877–1888.
<https://doi.org/10.1097/HJH.0000000000002115>