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Guided Imagery Relaxation Effectively Lowers Blood Pressure in Hypertension Patients

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ABSTRACT

Introduction: *Hypertension remains one of the primary contributors to cardiovascular disease and affects individuals across a broad age spectrum. To address this issue, effective management strategies are essential, particularly within primary healthcare services. This study investigates the impact of guided imagery relaxation in reducing blood pressure among hypertensive patients at Babadan Public Health Center, Indramayu.*
Objectives: *The purpose of this research was to evaluate the effectiveness of guided imagery relaxation in decreasing both systolic and diastolic blood pressure in patients diagnosed with hypertension.*
Methods: *A pre-experimental study design was employed involving 30 hypertensive patients registered at Puskesmas Babadan. Participants received a guided imagery relaxation intervention lasting 15 minutes per day over one week. Blood pressure was assessed before and after the intervention. Statistical analysis was conducted using paired t-tests to determine significant differences in blood pressure values.*
Results: *The intervention led to a statistically significant reduction in blood pressure. The average systolic pressure dropped from 152.3 mmHg to 140.5 mmHg (p = 0.000), and the diastolic pressure declined from 94.6 mmHg to 88.1 mmHg (p = 0.001).*
Conclusions: *Guided imagery relaxation proved to be effective in reducing both systolic and diastolic blood pressure among hypertensive patients. As a non-pharmacological method, it holds promise as a supportive therapy in hypertension management within primary care. Future studies are recommended to investigate its long-term effectiveness and potential for integration into standard healthcare routines.*

Introduction

Hypertension refers to persistent high blood pressure in an individual. Hypertension is classified as a chronic condition that can trigger severe complications, including stroke, cardiovascular disorders, and kidney failure, among other health issues. Strokes, along with heart disease, are incredibly dangerous and severe indicators of health complication risk, often requiring quick medical attention. If left unchecked, such signs can become a 'silent killer' as one does not actively attempt to resolve the issue at hand. Prevalent globally in almost 1 in 3 adults according to the WHO 2023 survey results, only a fraction of people suffering from hypertension have it under control, proving to be a global medical issue and challenge. This resulted in hope being severely minimized, along with the startling fact that the lack of proper medicine intake was under 50%. Indonesia, too, suffers from this condition, with startling facts revealing that 36.2% of citizens over 18 are hypertensive, along with a shocking lack of care for the disease. This indicates a stagnant increase in dependency on proper awareness, along with treatment beyond age and gender. Poor treatment adherence, poor lifestyle choices, and persistent stress are the three factors that make it difficult the control hypertension in society (Kvarnström et al., 2021) (Pourhabibi et al., 2022)

At the local level, data from the Indramayu Regency Health Office in 2023 indicates that hypertension remains one of the five most common ailments that are attended to and treated at

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healthcare centers (Dinkes Indramayu, 2023). In the Babadan Health Center working area alone, there are over 950 cases of active hypertension, most of whom are sufferers of uncontrolled blood pressure and do not have stable blood pressure even after routine treatment (Puskesmas Babadan Indramayu, 2023). This denotes that pharmacological measures alone are insufficient. There is thus a great deal of importance placed on the non-pharmacological measures for the control of hypertension, especially those that are adjunct, low-cost, simple to carry out, and can be done at the individual level in both the familial and communal context.

Chronic hypertension, stress, and anxiety can often lead to being unresponsive to conventional therapy. This therapeutic framework illustrates that guided relaxation imagery aids in the mitigation of blood pressure and stress while promoting the feeling of relaxation. (Ayada et al., 2015)(Nguyen & Brymer, 2018). One of the non-pharmacological treatments that exhibits great promise is termed guided imagery relaxation. This approach integrates the technique of controlled breathing into engaging one's mind in a mental picture of a peaceful environment, which sequentially helps in relaxation. Guided imagery technologies operate through the parasympathetic system. (Morgan et al., 2024). In essence, relaxation response strategies can bring about a calming effect that results in diminished blood pressure and heart rate, and less anxiety and stress. (Hamdani et al., 2022). Despite the wide implementation and success in particular foreign regions, little to no local adaptations exist for those who suffer from hypertension, specifically in Indonesia, thus creating a potential area for research.

The purpose of this study is to evaluate the effect of guided imagery relaxation therapy on blood pressure among hypertensive patients at Babadan Health Center, Indramayu Regency. This research is expected to contribute to the advancement of community nursing practices by promoting the integration of complementary therapies and providing evidence-based guidance for managing hypertension holistically and sustainably.

Methods

Research Design

This study utilized a pre-experimental framework employing a single-group pre-test and post-test methodology. (Marsden & Torgerson, 2012). It aims to assess how effective the guided imagery relaxation intervention is in lowering blood pressure among hypertensive patients. Although a control group was not included in this study, participants' blood pressure was assessed before and after receiving the intervention. Such a design is considered suitable for initial assessments of straightforward interventions conducted within community settings.

Population and Sample

This study involved hypertensive patients who were actively seeking care at Babadan Health Center, located within the service area of Indramayu Regency, during the year 2024. Participants were selected using purposive sampling, with the inclusion criteria as follows: (1) individuals aged 40 years or older, (2) diagnosed with hypertension based on the health center's official medical records, and (3) exhibiting a systolic blood pressure of ≥140 mmHg or a diastolic blood pressure of ≥90 mmHg, (4) being able to take part in the relaxation sessions, and (5) willing to become respondents by signing the informed consent document. The exclusion criteria were: (1) participants with severe hearing impairment, (2) severe mental illness, and (3) active use of sedative medication were not participating. The number of samples was determined by the Lemeshow formula for pre-experimental research, which required a minimum of 30 respondents to achieve appropriate inferred initial statistical power for community studies.

Data Collection Techniques and Instrument Development

Blood pressure measurements were performed using a calibrated Omron HEM-7120 digital sphygmomanometer, which meets clinical standards and offers an accuracy level of ±3 mmHg, in accordance with applicable health service protocols. Measurements were taken twice: prior to

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the intervention (pre-test) and 15 minutes after the intervention (post-test). Data collection was conducted using trained enumerators who ensured that measurements were done in a sitting position after respondents rested for at least 5 minutes.

The guided imagery relaxation intervention was administered once, in a single 20-minute session. During the session, participants were instructed to engage in guided imagery accompanied by soothing background music and deep breathing techniques. The audio was played using Polytron brand active speakers with a power output of 5 Watts, and the sound was adjusted to a comfortable volume level of approximately 60–70 decibels (dB). The guided audio material was developed based on relevant literature and was reviewed for cultural appropriateness and clinical relevance by two psychiatric nursing experts and two community health nursing practitioners.

In addition to blood pressure measurements, respondents were given an engagement observation sheet to capture concentration and comfort data during the relaxation session to provide non-quantitative evidence to support other collected data.

Data Analysis Techniques

The data were analyzed using parametric or non-parametric statistical methods based on the distribution characteristics. A paired t-test was applied for normally distributed data, while the Wilcoxon Signed Rank Test was used for non-normal distributions. The Kolmogorov-Smirnov test was conducted beforehand to assess data normality. All statistical analyses were performed using SPSS version 26.0, with a significance level set at $p < 0.05$.

Results

This study involved 30 respondents who met the inclusion criteria. The data collected consisted of respondent characteristics, blood pressure values before and after the intervention, and the results of statistical tests on the effectiveness of the guided imagery relaxation intervention.

Table 1. Distribution of Respondents' Characteristics According to Age and Gender

Characteristics	Frequency	Percentage (%)
Age		
40–49 years	8	26,7
50–59 years	13	43,0
≥60 years	9	30,0
Gender		
Male	11	36,7
Female	19	63,3

Based on Table 1, the largest proportion of respondents was in the 50–59 year age group (43.3%), suggesting that middle-aged individuals represent a significant segment of hypertension cases in the study area. Additionally, the majority of respondents were female (63.3%), indicating that women are more actively engaged in hypertension management efforts at the Babadan Health Center.

Table 2. Average Blood Pressure Before and After Guided Imagery Relaxation Intervention

Parameter	Mean ± SD (Pre-Test)	Mean ± SD (Post-Test)
Systolic blood pressure (mmHg)	152,3 ± 8,7	140,5 ± 7,9
Diastolic blood pressure (mmHg)	94,6 ± 6,1	88,1 ± 5,4

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As presented in Table 2, the mean systolic blood pressure before the intervention was 152.3 mmHg, which significantly decreased to 140.5 mmHg following the guided imagery relaxation. Likewise, the average diastolic pressure dropped from 94.6 mmHg to 88.1 mmHg. These findings suggest that the relaxation therapy had a beneficial impact on blood pressure regulation in individuals with hypertension.

The values are presented as mean ± standard deviation (SD), where the SD reflects the variability or dispersion of blood pressure readings among participants around the average (mean) value.

Table 3. Paired t-test Results on Differences in Blood Pressure Before and After Intervention

Parameter	Mean Difference	p-value
Systolic blood pressure	11,8 mmHg	0,000*
Diastolic blood pressure	6,5 mmHg	0,001*
Note: *Significant at p < 0.05		

Referring to Table 3, the paired t-test results reveal a statistically significant difference in blood pressure measurements before and after the intervention, with p-values of 0.000 for systolic and 0.001 for diastolic pressure. These outcomes confirm that the guided imagery relaxation method effectively reduces blood pressure in hypertensive patients within the Babadan Health Center service area, Indramayu Regency.

Discusion

1. Condition Before the Intervention

Based on Table 1, 43.3% of respondents were aged 50–59 years, and 63.3% were female. This demographic trend is consistent with previous research showing a higher prevalence of hypertension among middle-aged to older adults, particularly women. The 2018 Indonesian Health Survey (SKI) also indicated a progressive increase in hypertension rates with age, especially after 50 years (Bromfield et al., 2014)(Muli et al., 2020). Furthermore, (Raj et al., 2023) emphasized that hormonal changes during menopause contribute to the increased risk of hypertension among women. Factors such as adherence to treatment, diet, and physical activity also play a crucial role in blood pressure control. These findings underscore the need for age- and gender-specific preventive interventions, particularly in rural areas like Babadan, Indramayu, where healthcare access and awareness may still be limited.

2. Condition After the Intervention

Following the implementation of the guided imagery relaxation intervention, there was a notable reduction in participants' blood pressure levels. As shown in Table 2, the mean systolic blood pressure decreased from 152.3 mmHg to 140.5 mmHg, while the diastolic pressure decreased from 94.6 mmHg to 88.1 mmHg. These results suggest an effective physiological response to the intervention, potentially linked to reduced sympathetic nervous system activity and enhanced relaxation responses.

3. The Effect of Guided Imagery Relaxation

These outcomes support previous evidence regarding the efficacy of guided imagery relaxation as a complementary approach in hypertension management. Studies by (Hadjibalassi et al., 2018) and (Toussaint et al., 2021) demonstrated that guided imagery activates the parasympathetic nervous system, which plays a key role in reducing stress and lowering blood pressure. Additionally, (Kumari & Patil, 2023) reported that guided imagery significantly reduces anxiety and enhances quality of life. Research by (Muhammad Khir et al., 2024) further confirmed the benefits of relaxation-based techniques—such as guided imagery, deep breathing, and progressive muscle relaxation—in promoting psychological calm and physiological stability. In

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the context of this study, the application of culturally tailored guided imagery relaxation in a rural Indonesian setting presents a novel and effective strategy that can be feasibly integrated into primary healthcare programs to support non-pharmacological hypertension management.

The novelty of this research lies in applying guided imagery relaxation within a rural community health context, uniquely blending local cultural elements with psychological interventions, thereby expanding the scope of complementary therapies in Indonesia. The researchers assume that culturally contextualized guided imagery interventions will be more acceptable and effective for long-term hypertension management than generic relaxation techniques. As a practical solution, it is recommended that health centers, especially in rural areas, incorporate guided imagery relaxation into their hypertension control programs and provide training to healthcare workers to ensure sustainable and widespread application.

The research by Tomopoulos et al. also reported a marked lowering of blood pressure among hypertensive patients undergoing this technique, with anxiety reduction being the primary mediating mechanism. (Thomopoulos et al., 2014). According to the findings of Maria Mantiri et. Al., guided imagery intervention resulted in an average of 10-12 mmHg drop in systolic blood pressure, which was expected as a result of the intervention. (Maria Mantiri et al., 2024). The results, obtained through paired t-test analysis, revealed p-values of 0.000 for systolic and 0.001 for diastolic blood pressure, indicating that the observed reductions were statistically significant.

The unique contribution of applying guided imagery relaxation techniques in primary health care in a rural setting, such as Babadan Health Center, makes this study innovative. This technique was previously administered in urban hospitals or clinics. The contextual framework, including the use of local traditional music as relaxation exercises, is a culturally innovative approach not widely researched in Indonesia. The researcher's position in this case is that emotional and cultural aspects, such as the preference for natural sounds or regional music, As a culturally rooted emotion that significantly contributes to improving the efficacy of guided imagery, leading to greater patient acceptance and increased comfort throughout the intervention.

The results of this study demonstrate that guided imagery relaxation should be integrated into primary health care services as a supplementary strategy. Within health centers, health workers and integrated health post aides can be instructed to facilitate guided imagery sessions routinely. Moreover, patients with the appropriate audio guide can utilize the approach unsupervised and independently at home.

To provide a simple and immediate answer to the problem, it is advised that a relaxation room be incorporated into health centers, alongside developing a locally accessible guided imagery training module. This is expected to enhance the scope and impact of such psychosocial health services, especially in regions with inadequate access to psychosocial health support.

This study also has several shortcomings, including the use of a pre-experimental design with no control group, which is susceptible to history and maturation bias. Other limitations in evaluating the sustained impact of this intervention include the small sample size (n = 30) and measuring it only once after a brief intervention period. Thus, future studies should incorporate an experimental design with a control group and a greater sample size and implement a longitudinal assessment to evaluate the lasting impacts of guided imagery relaxation on blood pressure.

Conclusion

The present study demonstrates that guided imagery relaxation effectively reduces blood pressure among hypertensive patients served by the Babadan Health Center in Indramayu Regency. The findings reveal a significant decline in both systolic and diastolic blood pressure, consistent with prior research supporting relaxation techniques as beneficial for blood pressure control. This research underscores the value of non-drug interventions in hypertension management, particularly within primary healthcare facilities like community health centers.

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Furthermore, the study brings attention to the innovative implementation of guided imagery therapy in rural Indonesian healthcare contexts, which not only provides medical benefits but also increases patient involvement in managing their health conditions independently. With the significant results, it is important to consider the integration of this relaxation technique as part of public health programs in other health centers, especially those serving vulnerable groups such as hypertension sufferers.

For further research, it is recommended to develop studies with stronger designs, such as experiments with control groups and long-term measurements, to confirm the sustainability and generalizability of the results across populations. Further research also needs to consider the combination of relaxation interventions with other Interventions aimed at enhancing the well-being and overall quality of life for individuals living with hypertension.

This study provides a relevant contribution to hypertension control efforts in Indonesia. It opens up opportunities for the development of psychologically based interventions that are easier to implement in primary health facilities.

Ethical Approval and Participant Consent

This research was conducted by the ethical standards established by the Research Ethics Committee of Indramayu State Polytechnic, as documented under reference number 165/KEPK/I/2025. As is customary for all procedures within this study, relevant processes have received ethics committee approval before execution. In this study, each participant has been adequately informed about the study's objectives, detailed methodology, and possible risks involved before its undertaking. Consent documentation was provided after all study participants received sufficient information concerning their ability to freely withdraw at any time, with no adverse effects whatsoever. Such written consent was secured before any participant intervention or procedures commenced.

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