Effectiveness of Balinese Selonding Gamelan Music Therapy in Reducing Blood Pressure and Anxiety in Older Adults with Hypertension: A Quasi-experimental Study

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Abstract: Despite various efforts, controlling blood pressure among older adults remains suboptimal. This condition highlights the necessity for non-pharmacological interventions to complement pharmacological ones, such as music therapy. This quasi-experimental study examined the effect of Selonding Gamelan Music Therapy on anxiety and blood pressure in older adults with hypertension. Eighty older adults with hypertension were randomly selected using proportionate stratified sampling in Banjarangkan district, Bali province, Indonesia. Forty participants were entered into a control group, and after complete data collection, the same procedure was used to recruit 40 participants for an experimental group (n = 40). The experimental group listened to Selonding gamelan for 15 minutes per day at least three days a week for four weeks, but the control group did not receive it. Systolic and diastolic blood pressure measurements were taken twice, before and after the program.

The intervention instruments included Handphones, Earphones, an Onemed 200 Aneroid Blood Pressure machine, Observation Sheets, the Geriatric Anxiety Scale, and music therapy booklets. Data were analyzed using descriptive statistics, and paired and independent t-tests. The results revealed that after completing the Selonding gamelan music therapy, the experimental group had significantly decreased systolic blood pressure and anxiety compared to the control group but did not have significantly decreased diastolic blood pressure. Selonding gamelan can be provided simultaneously with medicine to lower blood pressure among older adults with hypertension. However, further study is needed with long-term follow-up in a large sample using a randomized controlled trial before it can be widely recommended in practice.

Keywords: Anxiety, Blood pressure, Older adults, Hypertension, Music therapy

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Introduction

Hypertension (HT) is commonly found in older adults. In Indonesia, the estimated percentage of HT cases identified in 2023 was around 30.8%.[1] In Bali province, HT sufferers reached 309,173 people.[2] Anxiety is among the elements that contribute to HT in older adults,[3] for 5–52% of older people suffer from anxiety, and more than 27% exhibit anxiety symptoms.[4] Anxiety can trigger the release of stress hormones such as adrenaline and noradrenaline, which cause vasoconstriction and ultimately increase blood pressure. Several types of non-pharmacological therapy are commonly used to reduce HT in older adults, such as exercise, muscle relaxation, meditation, lifestyle

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modifications, and music therapy.[5] Music therapy is one of the easiest, cheapest, and safest non-pharmacological therapies to use. However, its use is still limited to decreasing blood pressure and anxiety in people with hypertension (PW-HT).[6,7] Music therapy provides a helpful effect by influencing the working mechanisms of the nervous system and stress hormones such as cortisol.[8]

Choosing the right music is important because it is adapted to the patient's culture. The emotional effect of music associated with traditional culture is greater than unfamiliar music in reducing blood pressure.[5,9] Indonesia has cultural diversity and a musical heritage that has the potential to be used as music therapy, one of which is in Bali. Selonding gamelan is a kind of traditional Balinese music that includes calming, gentle tones that make it appropriate for older adults and can be utilized as therapy.[10] The gamelan Selonding is a musical instrument with a seven-tone pelog barrel. The iron material used to make Selonding blades has a different sound color from the bronze material, which is generally used in other Balinese gamelan. The rhythm of light music provides sound movement that can adjust the reception of waves in the ear.[8] Although some have researched various types of music therapy in Indonesia for reducing blood pressure in PW-HT, differences in views remain. Empirical studies suggest the effectiveness of music therapy in lowering blood pressure at both the systolic and diastolic levels. On average, these reductions are 16 mmHg and 7.83 mmHg, respectively.[7,11,12] Meanwhile, several studies found that music therapy does not significantly reduce diastolic blood pressure.[9,13] Aside from that, current research focuses solely on one component, either blood pressure or anxiety. Throughout a literature search, researchers could not locate studies that combined blood pressure and anxiety factors in PW-HT using Selonding gamelan music therapy (SGMT).

Literature Review and Conceptual Framework

This study conceptualized the phenomenon under investigation based on physiological mechanisms and relevant literature. HT is an increase in systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg after repeated measurements.[14] The incidence of HT is influenced by two factors, namely: 1) factors that cannot be changed, such as age, genetics, and gender, and 2) modifiable factors, such as obesity, smoking, and excessive alcohol consumption.[15,16] Previous studies state music therapy is effective in reducing anxiety and blood pressure in PW-HT.[6,11,12] Nevertheless, several studies reported that music therapy did not affect diastolic blood pressure.[9,13,17,18] All of the research reported no negative side effects during the intervention period; however, one study mentioned that if there were problems, a break was needed before continuing the intervention.[19] Several studies recommend that further research regarding the types of traditional music in a country is important to identify traditional music that provides therapeutic effects.[5,11] The average frequency of providing music therapy is 30 days, three days per week, which shows significant results.[13,20] The Nursing Intervention Classification (NIC) recommends the music therapy intervention be completed within 15 minutes.[21]

There was one study that found that using SGMT was limited to general anxiety in older adults.[10] The Selonding gamelan is one of the oldest types of gamelan and is full of religious values.[22] It is often used in religious ceremonies and originates from Bali Aga Village in Karangasem Regency. For Balinese people, the Selonding gamelan is a sacred gamelan that is closely related to the beliefs held by local residents.[23] Its unique musical nuances make it attractive to captivate every audience that listens to it.[10] The unique thing is that the iron material used in making Selonding blades has a different sound and

color from the bronze material, which is generally used in other Balinese gamelan.[23] The forging process and selection of the type of iron also affect the sound texture of the Selonding blade. Selonding music, which has a soft rhythm typical of Balinese instrumentals, can make listeners pensive and calm if they enjoy it and truly appreciate it. The rhythm of light music provides sound movement that can adjust the reception of waves to the ear.[10] In general, the sound pressure level of gamelan instruments can range between 80–100 decibels (dB).[23] Direct measurements using a sound level meter while listening to SGMT need to be carried out to ensure the threshold is in the range of 60–80 dB.[21,24]

Mechanism of music on blood pressure

Music can activate the parasympathetic nervous system by extending the body, controlling the heart rate, and relaxing the muscles around the organs.[7] Several factors influence the decrease in diastolic blood pressure, such as heart structure, sodium and fat consumption, smoking, and alcohol consumption.[25–27] Based on physiological mechanisms, listening to music with a slower rhythm stimulates the hypothalamus to send nerve signals to the brainstem nuclei that regulate the autonomic nervous system. The parasympathetic nervous system stimulates the formation of endorphins and serotonin. Music also stimulates the release of the hormone nitric oxide (NO), which decreases heart rate and causes vasodilation.[9,11] Additionally, music stimulation of the hypothalamus will influence the anterior pituitary by reducing corticotropin-releasing factor (CRF) synthesis and reducing ACTH production.[12] When ACTH levels are lower, the adrenal cortex produces less cortisol, which contributes to a drop in heart rate, blood pressure, and breathing frequency.[13,28]

Mechanisms of music on anxiety

Music therapy can be used to maintain or restore various behaviors and expressions as signs of someone experiencing anxiety.[10,29] Based on physiological mechanisms, the calm atmosphere of music will stimulate the senses of hearing, which are transmitted by the thalamus to the limbic system, which is related to emotions.[30] This journey will continue to the hippocampus, the amygdala and the hypothalamus.[29] As the main regulator of the endocrine system, the hypothalamus will stimulate the release of endorphins and pineal body hormones, reducing the production of epinephrine and cortisol from the kidney glands, thus creating a feeling of happiness and reducing the anxiety experienced by older adults.[30] Regulation by these hormones makes older adults feel calm, happy, and pleasant.[5,10,16] Increased comfort also has a positive impact on the development of physical health. The Selonding gamelan can create comfort for the soul. This is realized when the ears receive the soft sound of music typical of gamelan.[10] The Selonding gamelan can also stabilize the heart rate, soften breathing patterns, and ultimately provide psychological comfort.

Maintenance of blood pressure is crucial for older adults because it helps to lower their risk of developing additional cardiovascular disease. Reducing systolic blood pressure by 10 mmHg can reduce the risk of cardiovascular disease by 20%, heart failure by 28%, stroke by 27%, coronary heart disease by 17%, and overall death by 13%.[18] When giving experimental treatments to older adults, ensuring no unwanted side effects or increased medical expenses is important.[7] Therefore, SGMT, as traditional music, can be used as a non-pharmacological treatment because it has several advantages: being cheap, easy, and safe. Compared with classical music and other types of music, the Selonding gamelan elicits deeper emotions and familiarity with melody, instruments, and rhythm.[5,7]

Study Aim and Hypothesis

This study aimed to determine the effect of SGMT on reducing anxiety, systolic blood pressure, and diastolic blood pressure in older adults with HT. The hypothesis was that after receiving SGMT for four weeks, the mean anxiety, systolic, and diastolic blood pressure in the experimental group would be lower than those of the control group.

Methods

Design: The study employed a quasi-experimental design involving two distinct groups, utilizing a pretest-posttest method. To prevent the diffusion of intervention, the study was conducted with the control group first and then continued with the experimental group. This report is written following the TREND Statement Checklist on Transparent Reporting of Evaluation Non-Randomized Controlled Study.

Sample and Setting: The total sample for this study was 80 older adults who lived in the Primary Health Center Banjarangkan I area, Bali province, Indonesia. This first-level health service facility accommodates seven villages and provides preventive, promotive, curative, and rehabilitative services to individuals and communities in the Banjarangkan district. The sample size was estimated using the Rosner formula to test the average difference between two groups with an effect size using the research results of Astuti et al.[13,31] The number of sample obtained was 32, which was increased by 20% to anticipate dropouts for each group. The final sample size was 40 for each group. We used proportionate stratified random sampling based on the area where older adults live to ensure that each village was represented, followed by simple random sampling. Next, the researcher visited the participants' houses door-to-door in each village.

Inclusion criteria were: 1) older adults aged 60-74 years, 2) having primary HT for at least the last three months and consuming amlodipine 5 mg, 3) haing ability to communicate verbally, 4) having body mass index (BMI) with normal weight (18.5-24.9 kg/m^2), 5) no mental disorders with a score of 0-7 out of 28 on the 6 Item Cognitive Impairment Test (6CIT), and 6) liked Balinese gamelan music. Exclusion criteria were: 1) older adults who suffered from critical hypertension with systolic ≥ 180 mmHg and diastolic ≥ 120 mmHg or who have other comorbidities, 2) having hearing problems, 3) consuming alcohol, 4) smoking, 5) before the study, regularly listening to Selonding gamelan or favorite music, and 6) stopping or refusing to continue participation in data collection. During the study, no participants dropped out.

Ethical Considerations: The ITEKES Bali Research Ethics Committee approved this study with code 04.0369/KEPITEKES-BALI/VII/2023. In this study, the rights of the participants were protected, such as providing written informed consent after being given information about the research objectives, procedures, and benefits of the research. Their names were not included in any reports, all data was kept confidential, and participants could contact the research team at any time during the study to ask questions or express concerns. In addition, to uphold the principle of fairness, participants in the control group could receive SGMT in the experimental group after the study concluded if they chose this.

Instrument: This study used screening, data collection, and SGMT instruments.

The 6 Item Cognitive Impairment Test (6CIT) is a questionnaire to assess cognitive impairment. The Institute for the Development of Basic Sciences and Languages at Muhammadiyah University in Surakarta translated the 6CIT into Indonesian with a Cronbach's alpha score of 0.78, with 30 participants.[32] The 6CIT test is a short and simple cognitive test consisting of six questions: a score of 0-7 (normal condition), a score of 8-9 (mild cognitive impairment), or a score of 10-28 (severe cognitive impairment).

The Demographic Data Form included sex, age, marital status, education level, and employment status. It was given to the experiment and control groups and filled in by families and participants.

The Geriatric Anxiety Scale (GAS) was developed by Segal et al.[33] The researchers translated the GAS into Indonesian through backward translation and semantic equivalence involving two linguistic experts certified as translators and one expert from the health sector. Then, a content validity test involved three gerontic and HT experts (academic, nurse, and doctor). The testing score I-CVI results of 0.99 and Cronbach's alpha of 0.83. The GAS consists of 25 items, with three subscales: somatic (9 items), affective (8 items), and cognitive (8 items). A total of 25 items measure the

anxiety experienced, while the remaining five items determine areas that cause anxiety. The GAS uses a 4-point Likert scale: 0 (not at all), 1 (sometimes), 2 (most of the time), and 3 (all of the time). The total score ranges from 0 to 75, with a higher score indicating higher anxiety. The score is also classified into four categories: minimal anxiety (0–18), mild anxiety (19–37), moderate anxiety (38–55), and severe anxiety (56–75). Cronbach's alpha reliability in this study was 0.77.

The Onemed 200 aneroid blood pressure machine: This equipment was calibrated before data collection to ensure accurate blood pressure.

The Balinese Selonding gamelan music therapy instrument: In this study, equipment included handphones, earphones, observation sheets, music therapy standard operational procedures (SOPs), and music therapy booklets. The handphones and earphones belonged to the participants and their families. They increased concentration and reduced external distractions, allowing the effects of SGMT to be felt more deeply.[34,35] The handphones and earphones used had undergone validity and reliability tests, such as sound clarity, connection stability, and product performance, to ensure all devices function and have the same quality. The Selonding gamelan used comes from Bali Aga Village in Karangasem Regency, and its use was approved by the Selonding Bali Aga Community music composer. It was downloaded from YouTube.

Music therapy SOPs were used to guide researchers, and music therapy booklets were used to guide participants or their families to carry out music therapy procedures with standard instructions. The above instrument was declared valid by five experts (three academics, a musician, and a nurse) who are experts in the field of music therapy and HT, and the I-CVI result was 0.80. The SGMT included up to 12 sessions lasting 15 minutes each day for at least three days per week over four weeks. The four weeks were used because several previous studies, such as Astuti et al.[13] found that after the experiment was carried out for six days, blood pressure could be lower. The experimental group received 15 minutes of SGMT by sleeping on their back or sitting in a relaxed position without doing any activities in a comfortable and quiet room. In comparison, the control group only rested for 15 minutes.

Data Collection: The research was conducted from August to October 2023 after IRB approval. The blood pressure was taken twice: at baseline and after the program. At the first meeting, the researcher explained the study's benefits, objectives, and procedures and asked whether the potential participants were willing to participate by signing an informed consent. Furthermore, researchers distributed music therapy guidebooks to participants and families at the beginning of the session to increase the application of SGMT. Researchers conducted a pre-test by administering the GAS and measuring blood pressure. Blood pressure was taken after resting for five minutes with the table supporting the arms with both feet touching the floor, uncrossed, as the Association of Indonesian Doctors of Hypertension recommended.[36] After completing the measures, the respondents were given five minutes of relaxation. Then they had 15 minutes to spend sleeping on their backs or sitting comfortably and doing nothing but listening to music through earbuds. The participants then took a 5-minute break before returning to their previous activity. Family members monitored the intervention's implementation by filling out the observation sheet supplied at the start of the meeting. The researcher trained the family to assist and monitor the participants while they carried out the intervention. Apart from that, researchers always reminded families and ensured that the intervention schedule was carried out according to procedures and, at the same time, via WhatsApp. At the 12th meeting (4 weeks), the researchers again collected data (post-test) with the Anxiety Questionnaire and measured blood pressure.

Data Analysis: The data were analyzed using SPSS 24 statistical software. The Shapiro-Wilk test was analyzed for normality. Descriptive statistics were used to analyze the demographic data for both groups. The differences in demographic data between the two groups were examined using the chi-square test, independent t-test, and Fisher's exact test. The independent t-test

was used to compare the mean scores between the experimental and control groups with a 2-sided significance level of 0.05. Then, the paired t-test was used to analyze the differences between before and after receiving the intervention in each group.

Results

Participant characteristics

The majority were aged 70-74, with 19 (47.5%) in the experimental group and 16 (40%) in the control group. The gender ratios in the experimental and control groups were 1:1. Participants were mostly married, 29 (72.5%) in the experimental group and 23 (57.5%) in the control group. In both groups, most participants had never gone to school, with 12 (30%) in the experimental group and 11 (27.5%) in the control group. Most were unemployed, with 27 (67.5%) in the experimental and control groups (**Table 1**). Chi-square test, independent t-test, and Fisher's exact test revealed no statistically significant difference between the two groups.

Table 1. Demographic characteristics of participants

Characteristics	Experimental group (n = 40)		Control group (n = 40)		Statistics	p-value
	n	%	n	%		
Age (years)					1.457	0.483[a]
60-64	11	27.5	9	22.5		
65-69	10	25.0	15	37.5		
70-74	19	47.5	16	40.0		
Mean (SD)	68.08 (5.09)		68.03 (4.58)		0.261	0.963[b]
Sex					-	1.000[c]
Male	20	50.0	20	50.0		
Female	20	50.0	20	50.0		
Marital status					2.618	0.270[a]
Married	29	72.5	23	57.5		
Single	-	-	1	2.5		
Separated/divorced/ widowed	11	27.5	16	40.0		
Educational background					6.072	0.194[a]
Never went to school	12	30.0	11	27.5		
Elementary school	6	15.0	9	22.5		
Junior high school	4	10.0	10	25.0		
Senior high school	10	25.0	4	10.0		
Bachelor's degree	8	20.0	6	15.0		
Employment status					-	1.000[c]
Work	13	32.5	13	32.5		
Unemployed	27	67.5	27	67.5		

Note. [a] = Chi-square test, [b] = Independent t-test, [c] = Fisher's exact test

Effects of the Selonding Gamelan Music Therapy (SGMT)

After completing the 12 sessions (4 weeks) of SGMT, participants in the experimental group decreased their anxiety level to a lower level than in the control group (**Table 2**). **Table 3** and **Figures 1-3** indicate that after completion of the SGMT, anxiety and systolic and diastolic blood pressure in the experimental group were significantly lower than at baseline and those of the control group. In the control group, only systolic blood pressure was significantly lower than at baseline, while anxiety and diastolic blood pressure did not decrease effectively.

Table 2. Level of anxiety baseline and after completion the intervention between experimental and control groups

Anxiety level	Experimental group (n = 40)		Control group (n = 40)	
	n	%	n	%
Baseline				
Minimal	-	-	-	-
Mild	10	25.0	23	57.5
Moderate	30	75.0	17	42.5
Post-test				
Minimal	3	7.5	-	-
Mild	37	92.5	25	62.5
Moderate	-	-	15	37.5

Table 3. Comparison of mean scores of anxiety, systolic and diastolic blood pressure between experimental and control groups and between baseline and after completion the intervention in each group

Variables	Experimental group		Control group		t^c	p-value[d]
	Mean	SD	Mean	SD		
Anxiety						
Baseline	39.58	4.87	36.58	5.83	-6.452	< 0.001
Post-test	28.10	5.85	36.15	5.30		
t^a	17.330		1.648			
p-value[b]	< 0.001		0.107			
Systolic blood pressure (mmHg)						
Baseline	155.20	10.47	135.85	7.84	2.136	0.036
Post-test	149.13	9.96	144.90	9.32		
t^a	15.593		6.864			
p-value[b]	< 0.001		< 0.001			
Diastolic blood pressure (mmHg)						
Baseline	87.50	12.28	75.45	10.27	-1.979	0.051
Post-test	81.60	12.43	79.95	10.07		
t^a	7.651		1.854			
p-value[b]	< 0.001		0.071			

Note. [a,b] = Paired t-test, [c,d] = Independent t-test

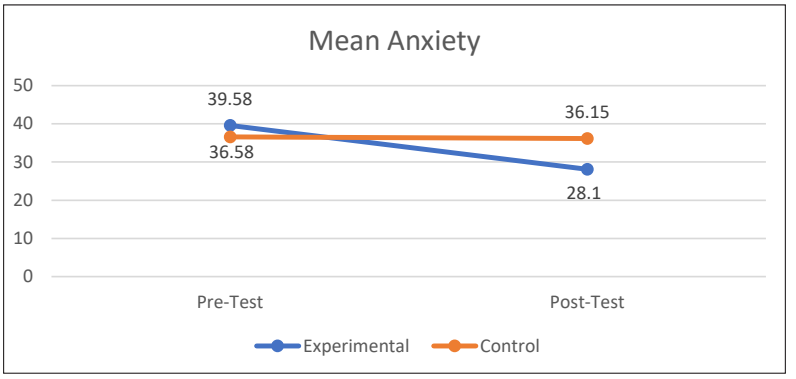

Figure 1. Difference in mean anxiety in the experiment and control groups

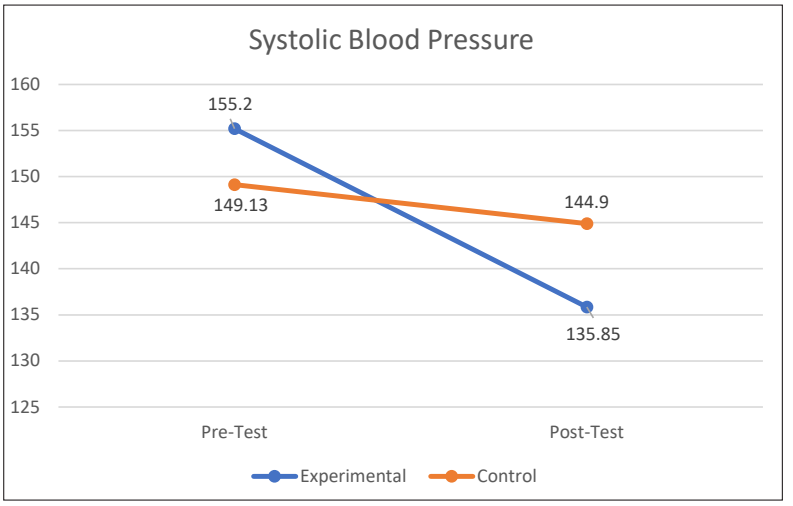

Figure 2. Difference in mean systolic blood pressure in the experiment and control groups

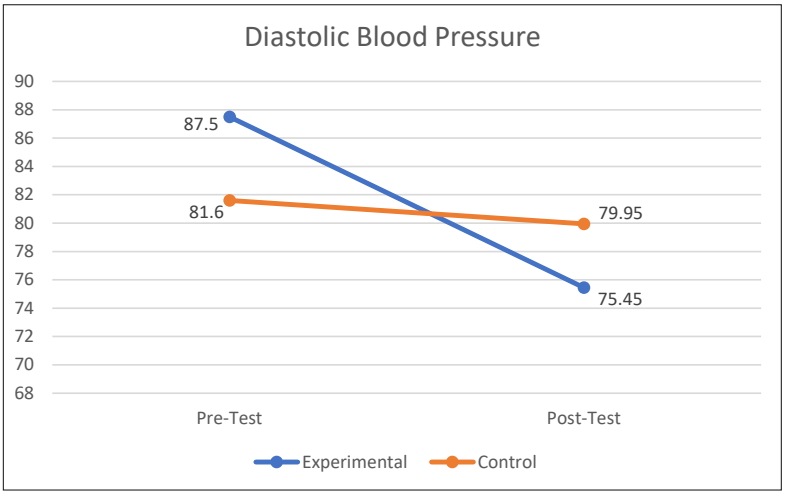

Figure 3. Difference in mean diastolic blood pressure in the experiment and control groups

Discussion

This study revealed that SGMT provided for 15 minutes each day for at least three days per week effectively reduced anxiety and systolic blood pressure, but not diastolic blood pressure, in older adults with HT. Selonding gamelan stimulates the sense of hearing, which is transmitted by the thalamus to the limbic system related to emotions.[37,38] This journey will continue to the hippocampus and continue towards the amygdala, and the hypothalamus, as the main regulator of the endocrine system, will stimulate the release of endorphins and pineal body hormones, reducing the production of epinephrine and cortisol from the adrenal glands, thereby creating a feeling of happiness and reducing anxiety in older adults.[30] Selonding gamelan also generates vibration waves that can stimulate axons, ascending sensory fibers, neurons, and the reticulated activator system (RAS).[10] The thalamus transmits stimuli to the autonomic nerve and neuroendocrine systems. The stimulation causes the nervous system to produce nitric oxide (NO) molecules, which operate on blood vessel tone and, therefore, lower the level of blood pressure.[26]

Listening to SGMT can comfort the soul when the ears receive the soft musical sounds typical of gamelan. The rhythm of light music provides sound movement that can adjust the reception of waves in the ear.[10] Selecting music tied to traditional culture has a stronger emotion effect than music unfamiliar to the listener.[5] The unique musical nuances that it has make the Selonding gamelan have an appeal that can captivate the listener by making it pensive and calm.[23] Therefore, older adults will experience emotional changes from being anxious, tense, and confused to having peace of mind. Based on the results of interviews after listening to four weeks of Selonding gamelan in the experimental group, participants said that SMGT made them relaxed and calm, helped them sleep better, and reduced their neck pain. Music therapy has also been shown to reduce heart rate and eliminate clinical symptoms, including headaches, fainting, and tightness in the chest.[28] This will trigger the process of decreasing systolic blood pressure. Our study findings are consistent with previous studies showing that SGMT can reduce anxiety in older adults with HT.[5,10,18] Aside from that, our findings from this study are consistent with other earlier studies showing that music therapy lowers systolic blood pressure in both the experimental and control groups.[9,12,13,37]

For diastolic blood pressure, even though no significant difference was found between the groups after completion of the SGMT, it was noticed that the experimental group had a greater average lower diastolic blood pressure of 12.05 mmHg than the control group's 1.65 mmHg, and the p value = 0.051 was almost significantly different. This study's findings are similar to those of previous research, which successfully decreased systolic blood pressure but did not considerably lower diastolic blood pressure.[12,13,16] The ineffectiveness of SGMT in lowering diastolic blood pressure may be impacted by characteristics uncontrolled in this study, including eating habits (diet) in hypertensive individuals. Anti-hypertensive diets, such as those low in salt and fat, are useful in lowering blood pressure, particularly diastolic blood pressure.[17,39] Future studies are expected to include dietary factors in testing the efficiency of music therapy. Diastolic blood pressure is frequently connected with heart muscular function; the heart's capacity for pumping and the rigidity of the cardiac muscle leads to a decline in diastolic blood pressure, although not considerably.[16] Meanwhile, in systolic blood pressure, cardiac activity may change rapidly due to changes in blood vessel flexibility so that systolic blood pressure can fluctuate faster than diastolic blood pressure. In addition, the modest drop in diastolic blood pressure was produced by the effects of pharmaceutical therapy, which ran independently of enhanced resting muscles and air utilization, which might assist in lower vascular tone.

This study found that the combination of antihypertensive drugs and music had a greater effect on those with HT in the experimental group than only

antihypertensive drugs in the control group. Combining pharmacological and nonpharmacological treatments helps ensure the greatest possible drop in blood pressure.[25] In addition, SGMT can be implemented as an independent and innovative intervention based on evidence-based practices in the maintenance care of older people with hypertension along with pharmacological therapy.[20] Listening to music is an alternative because it is simple and easy to grasp, and everyone enjoys music, including listening to SGMT. Music therapy is typically associated with a desire for spiritual pursuits, rituals, or other religious and natural force-based practices.[5,6] SGMT is directly related to religious rites and aligned with the participants' beliefs.

Limitations

There are several limitations; firstly, based on the design, sample selection in this study was carried out without randomization, and the sample size was quite small. Secondly, the observation of SGMT and outcomes could not be carried out continuously during the study for all participants but relied only on caregivers to remind and observe participants. Thirdly, due to time constraints, this study's experimental evaluation was only conducted for four weeks, during which blood pressure readings were taken only twice, before and after the program, without ongoing follow-up investigations. and thus, in future, blood pressure measurements need to be taken more frequently and for a longer period after the completion of this music therapy.

Conclusion and Implications for Nursing Practice

The SGMT is effective in lowering anxiety and systolic blood pressure but not diastolic blood pressure in older people with HT. Therefore, nurses and other health care providers might use SGMT as a complementary therapy along with pharmacological medication to reduce anxiety and systolic blood pressure among PW-HT. The SGMT is a non-invasive therapy that is inexpensive, easy to operate, and safe. Future studies with long-term follow-up in larger groups and randomized controlled trials are recommended.

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ประสิทธิภาพของการบำบัดด้วยดนตรี Selonding Gamelan แบบบาหลีในการลดความดันโลหิตและความวิตกกังวลในผู้สูงอายุที่มีความดันโลหิตสูง : การศึกษากึ่งทดลอง

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บทคัดย่อ: ถึงแม้จะมีความพยายามในการควบคุมความดันโลหิตในผู้สูงอายุเป็นอย่างมาก แต่ผลลัพธ์ก็ยังไม่ถึงเป้าหมาย ปัญหานี้ แสดงให้เห็นถึงความจำเป็นในการใช้การบำบัดที่ไม่ใช่ยาเพื่อเสริมประสิทธิผลการบำบัดที่ใช้ยา เช่น การบำบัดด้วยดนตรี การศึกษากึ่งทดลองนี้ศึกษาผลของการบำบัดด้วยดนตรี Selonding gamelan (ดนตรีพื้นเมืองในวงมโหรี ที่มักใช้บรรเลงในพิธีศักดิ์สิทธิ์ของชาวบาหลี) ต่อความวิตกกังวลและความดันโลหิตในผู้สูงอายุที่เป็นโรคความดันโลหิตสูง ผู้สูงอายุที่มีความดันโลหิตสูงจำนวน 80 รายได้รับการสุ่มแบบแบ่งชั้นตามสัดส่วนในเขตบานจารังกัน (Banjarangkan) จังหวัดบาหลี ประเทศอินโดนีเซีย ผู้เข้าร่วมวิจัย 40 รายได้รับการคัดเลือกเข้ากลุ่มควบคุมก่อน และหลังจากรวบรวมข้อมูลครบถ้วนแล้ว จะใช้วิธีการเดียวกันในการคัดเลือกผู้เข้าร่วมวิจัย 40 รายเข้าในกลุ่มทดลอง (n = 40) กลุ่มทดลองฟังดนตรี Selonding gamelan เป็นเวลา 15 นาทีต่อวัน อย่างน้อย 3 วันต่อสัปดาห์เป็นช่วงเวลา 4 สัปดาห์ แต่กลุ่มควบคุมไม่ได้รับฟังคนตรี ผู้วิจัยวัดความดันโลหิตซิสโตลิกและไดแอสโตลิกสองครั้ง คือ ก่อนและหลังโปรแกรมสิ้นสุด เครื่องมือที่ใช้ในการวิจัย ได้แก่ โทรศัพท์มือถือ หูฟัง เครื่องวัดความดันโลหิตแบบไม่ใช้ปรอท (Onemed 200 aneroid) แบบฟอร์มสังเกตบันทึก แบบประเมินความวิตกกังวลในผู้สูงอายุและคู่มือดนตรีบำบัด วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และการทดสอบ paired t-test และ independent t-test

ผลการศึกษาพบว่า หลังจากเสร็จสิ้นการบำบัดด้วยดนตรี Selonding gamelan กลุ่มทดลองมีความดันโลหิตซิสโตลิกและความวิตกกังวลลดลงอย่างมีนัยสำคัญเมื่อเทียบกับกลุ่มควบคุม แต่ความดันโลหิตไดแอสโตลิกไม่ได้ลดลงอย่างมีนัยสำคัญ ดังนั้น ดนตรี Selonding gamelan สามารถใช้ร่วมกับยาเพื่อลดความดันโลหิตในผู้สูงอายุที่มีความดันโลหิตสูงได้ อย่างไรก็ตาม จำเป็นต้องมีการศึกษาเพิ่มเติมพร้อมการติดตามผลในระยะยาวในกลุ่มตัวอย่างขนาดใหญ่โดยใช้การทดลองแบบสุ่มที่มีกลุ่มควบคุม ก่อนที่จะสามารถใช้เป็นคำแนะนำอย่างแพร่หลายในการปฏิบัติ

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