

The Effect of Gamelan Music Therapy on Blood Pressure and Sleep Quality in Elderly People with Hypertension

Dwi Suprianto^{1*}, Ady Irawan², Dwi Lestari Mukti Palupi³

^{1,2,3} Bachelor of Nursing, Faculty of Health Sciences, Duta Bangsa Surakarta University

* Correspondence: dwisuprianto033@gmail.com

Submitted : 25-01-2026

Reviewed : 30-01-2026

Accepted : 05-05-2026

ABSTRACT

Background : Hypertension and sleep disorders are two common health problems in the elderly and are interrelated. Uncontrolled high blood pressure can worsen sleep quality, and vice versa. Elderly people with poor sleep quality are at risk of experiencing increased blood pressure due to imbalances in the nervous and hormonal systems. Gamelan music therapy is a non-pharmacological intervention that has been proven to have a relaxing effect through a stable rhythm and tempo, thus potentially lowering blood pressure while improving sleep quality.

Objective : This study aims to determine the effect of gamelan music therapy on reducing blood pressure and improving sleep quality in elderly people with hypertension in Kujon Hamlet, Wonodoyo Village, Cepogo District, Boyolali Regency.

Methods : This study used a quantitative method with a quasi-experimental pretest-posttest design with a control group. A sample of 52 elderly people was selected using a total sampling technique and divided into intervention and control groups. The intervention group was given regular gamelan music therapy, while the control group received no treatment. The instruments used were a blood pressure observation sheet and a PSQI (Pittsburgh Sleep Quality Index) questionnaire to measure sleep quality. Data analysis in this study used appropriate statistical tests, including the Chi-Square test. **Results :** This study showed a significant decrease in systolic and diastolic blood pressure and a significant increase in sleep quality in the intervention group ($p < 0.05$). Meanwhile, the control group did not experience significant changes. **Conclusion :** Gamelan music therapy has been proven effective in lowering blood pressure and improving sleep quality in elderly people with hypertension.

Keywords : Elderly, Hypertension, Gamelan Music Therapy, Sleep Quality

Duta Medika Nursing Journal is published by Duta Bangsa University, Surakarta.

Website: ojs.udb.ac.id

Introduction

Elderly individuals are individuals aged over 60 years (Widiyanto et al., 2022). Aging is part of the natural process of growth and development. Humans do not grow old suddenly, but rather go through stages of life, starting from infancy, adulthood, and finally entering old age. At this stage, there is a gradual decline in physical, mental, and social functions as part of the natural process of life (Ruswadi, 2022). Hypertension is a condition in which blood pressure exceeds normal limits, namely systolic blood pressure > 140 mmHg and/or diastolic blood pressure > 90 mmHg on repeated assessments. Hypertension, also called high blood pressure, is caused by the malfunction of blood vessels when blood carrying oxygen and nutrients is blocked from reaching body tissues (Resya, 2024).

Increasing human life expectancy has led to a growing elderly population. By 2030, it is estimated that at least 1 in 6 people worldwide will be 60 years of age or older. The global population aged 60 and over is predicted to double to 2.1 billion by 2050 (WHO, 2022). According to data from the WHO (World Health Organization), approximately 19.1% of the global population has experienced sleep disorders, and the number of these disorders increases annually, with complaints so severe that they cause mental distress for sufferers (Juwita et al., 2023).

Insomnia is the most common sleep disorder. Every year It is estimated that 25%-57% of older adults report experiencing sleep disorders, and around 19% experience serious sleep disorders. In Indonesia, the prevalence of sleep disorders in older adults was quite high in 2020, at around 67% (WHO, 2020). Meanwhile, insomnia is common in people over 60 years of age. The elderly are more likely to complain of difficulty falling asleep and waking up earlier than 5:00 a.m. Furthermore, 30% of older adults over seventy years of age wake up frequently during the night (McCall, 2021).

Hypertension in the elderly can cause serious consequences, such as increased heart workload, decreased blood vessel elasticity, and an increased risk of stroke and kidney failure. High blood pressure can also affect the central nervous system, making the elderly more susceptible to sleep disorders (Lukitaningtyas, 2023). Sleep disorders themselves negatively impact the body, increasing activation of the sympathetic nervous system, increasing the release of cortisol and other stress hormones, and causing vasoconstriction of blood vessels (Islami, 2025). This makes blood pressure even more difficult to control, while current treatment has focused primarily on medication. However, non-pharmacological therapies are also possible, one of which is gamelan music therapy. The calm and regular rhythm of gamelan music can relax the body, reduce muscle tension, slow the heart rate, and help lower blood pressure. This relaxed state also promotes easier and more restful sleep. Therefore, this research is important to demonstrate that gamelan music can be a simple, affordable, and culturally appropriate way to help the elderly control blood pressure while improving sleep quality (Yuniarti, 2024).

Globally, more than 1 billion people suffer from high blood pressure, meeting the criteria for hypertension. The high incidence of hypertension occurs across various socioeconomic groups and tends to increase with age, with the percentage reaching 60% in individuals over 60 years of age (Mills KT et al., 2020). Based on the 2018 National Basic Health Research Report on 658,201 research subjects from all provinces in Indonesia, the prevalence of hypertension based on blood pressure measurements was 34.11%. (Risesdas 2018). The Central Java Health Office stated that hypertension is the most dominant Non-Communicable Disease (NCD) compared to other NCDs, amounting to 68.9% in 2019 (Muzaenah et al., 2024). The Boyolali Regency Health Office stated that there were 208,770 people with hypertension in Boyolali Regency. And hypertension sufferers in Cepogo District are ranked fourth, namely 12,968 in 2023 (Boyolali, 2023).

According to research conducted by Sashikirana et al., (2024), hypertension can cause symptoms that disrupt the comfort of sufferers. Common forms of discomfort include headaches, stiffness or tension in the neck and nape, heart palpitations, difficulty sleeping, and others. This discomfort can hinder the daily activities of people with hypertension, so appropriate treatment is needed to reduce high blood pressure and its effects. One of the discomforts found in elderly people with hypertension is difficulty sleeping. Poor sleep quality in people with hypertension can worsen hypertension and increase the risk of heart disease, stroke, and psychological problems such as depression (Suherman, 2024).

Management to improve blood pressure and sleep quality can be done through pharmacological and non-pharmacological approaches. One form of non-pharmacological intervention that is starting to be widely developed is music therapy. Gamelan music therapy, as part of traditional Indonesian music, has the potential to provide a relaxing effect that can reduce the activity of the sympathetic nervous system, thereby helping to lower blood pressure and improve sleep quality, especially in the elderly group. The results of research by Nanik et al., (2023) said that gamelan music therapy is effective in improving sleep quality in the elderly in Lengkong Hamlet, Mojoanyar District, Mojokerto Regency. The results of this study are after being given gamelan music and Keroncong music on sleep quality in the elderly in Lengkong Hamlet, Mojoanyar District, Mojokerto Regency. From the results of the McNemar Test in the Gamelan Music Group, a p value of $0.00 < 0.05$ was obtained and in the Keroncong Music Group a p value of $0.01 < 0.05$. In another study conducted by Sashikirana et al., (2024) showed that the combination of foot massage and gamelan music therapy had a positive effect on reducing blood pressure, heart rate, and improving sleep quality in hypertensive patients with the results of the study showing that there were changes in blood pressure with an average decrease of 10.3 mmHg per day in systolic blood pressure and 4.3 mmHg in diastolic pressure. Meanwhile, the average decrease in heart rate frequency after the intervention was 2.3 x/minute per day and the PSQI score experienced an average decrease of 1.3 per day.

Based on this background, this study aims to determine the effect of gamelan music therapy on blood pressure and sleep quality of elderly people with hypertension in Kujon hamlet, Wonodoyo sub-district, Cepogo district, Boyolali district.

Method

This research is a quantitative research with *Quasi Experimental design* using *Pretest-Posttest with Control Group approach*. This study aims to determine the relationship of gamelan music therapy to lower blood pressure and improve sleep quality in elderly with hypertension. The population in this study were all elderly people with hypertension in Kujon Hamlet, Wonodoyo Village, Cepogo District, Boyolali Regency, with a total population of 52 elderly people. The sampling technique used total sampling and to anticipate dropout the researcher added a reserve of 15%, so that a total of 52 respondents were obtained who were divided into intervention and control groups.

The independent variable in this study was the provision of gamelan music therapy. The dependent variables were blood pressure (systolic and diastolic) and sleep quality in the elderly. Data collection instruments used a blood pressure observation sheet and *the Pittsburgh Sleep Quality Index* (PSQI) to assess sleep quality. The study procedure began with blood pressure and sleep quality measurements before the intervention (*pretest*), followed by gamelan music therapy for several days according to established SOPs. After the intervention, blood pressure and sleep quality were measured again (*posttest*).

Data analysis was conducted univariately to explain the characteristics of respondents based on age, gender, and medical history which will be presented in the form of minimum, maximum, mean, and standard deviation, and bivariate using the Chi-Square statistical test and non-parametric tests (*Wilcoxon test* and *Mann-Whitney U Test*) based on the results of the data normality test. This study has obtained ethical approval from the Health Research Ethics Commission of ITS PKU Muhammadiyah Surakarta with registration number 056/LPPM/ITS.PKU/III/2025.

Results

Table 1 Respondent Characteristics

Respondent Characteristics	Intervention F (%)		Control F (%)	
Gender				
Man	10	38.5%	10	38.5%
Woman	16	61.5%	16	61.5%
Total	26	100%	26	100%
Age				
60-74 Years	21	80.8%	20	76.9%
75-90 Years	5	19.2%	6	23.1%
Total	26	100%	26	100%
Work				
Farmer	23	88.5%	20	76.9%
Housewife	3	11.5%	6	23.1%
Total	26	100%	26	100%
Long Suffering				
< 5 Years	12	46.2%	13	50.0%
>5 Years	14	53.8%	13	50.0%
Total	26	100%	26	100%
Medical History				
There isn't any	22	84.6%	26	100%
Dm	2	7.7%	0	0.0%
Gout	2	7.7%	0	0.0%
Total	26	100%	26	100%

Based on Table 1, it shows that the majority of gender in the intervention group and the control group were women, as many as 16 respondents (61.5%). The majority of respondents in the intervention group were aged 60-74 years as many as 21 (80.8%) and in the control group were

aged 60-74 years as many as 20 (76.9%), the majority of respondents in the intervention group worked as farmers as many as 23 (88.5%) and in the control group the majority worked as farmers as many as 20 (76.9%). The duration of hypertension in the intervention group was mostly > 5 years with 14 (53.8%), and in the control group it was balanced, namely 13 respondents suffered from hypertension <5 years and 13 other respondents >5 years (50.0%).

Table 1 Results of Average Blood Pressure Measurements in the Intervention Group

Group	Day 1		Day 2		Day 3		Day 4	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
	Systolic	Diastol	Systolic	Diastol	Systolic	Diastol	Systolic	Diastol
Pre-Test	169.00	99.12	171.12	92.27	169.00	87.54	166.31	84.81
Post Test	159.81	87.96	165.92	85.96	162.54	82.65	159.46	81.12

Based on Table 2, the average blood pressure in the intervention group before (pre-test) the gamelan music therapy was 169.00/99.12 mmHg (with a systolic blood pressure range of 147-220 mmHg and a diastolic blood pressure of 81-125 mmHg) and the average blood pressure after (post-test) the gamelan music therapy was 159.46/81.12 mmHg (with a systolic blood pressure range of 142-197 mmHg and a diastolic blood pressure of 76-89 mmHg). mmHg) .

Table 3 Results of Average Blood Pressure Measurements in the Control Group

Group	Day 1		Day 2		Day 3		Day 4	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
	Systolic	Diastol	Systolic	Diastol	Systolic	Diastol	Systolic	Diastol
Pre-Test	156.42	89.42	150.73	85.00	153.81	84.46	157.42	85.12
Post Test	151.92	87.77	149.19	82.42	151.65	82.31	154.46	82.50

Based on table 3, the average blood pressure in the control group in the pre-test measurement was 156.42/89.42 mmHg (with a systolic blood pressure range of 140-178 mmHg and diastolic blood pressure of 76-104 mmHg) and in the post-test measurement was 154.46/82.50 mmHg (with a systolic blood pressure range of 142-168 and diastolic blood pressure of 77-88 mmHg).

Table 4 Results of Sleep Quality Measurement

Group	Sleep Quality	Frequency (n)	Percentage (%)
Intervention	Good	8	30.8%
		18	69.2%
	Total	26	100%
	Post test	20	76.9%
		6	23.1%
	Total	26	100%
Control	Pre-test	1	3.8%
		25	96.2%
	Total	26	100%
	Post test	3	11.5%
		23	88.5%
	Total	26	100%

Based on Table 4, in the intervention group before being given gamelan music therapy, the majority of respondents had poor sleep quality, namely 18 respondents (69.2%), while good sleep quality was experienced by 8 respondents (30.8%). After being given gamelan music therapy, the number of respondents with good sleep quality increased to 20 respondents (76.9%) and poor sleep quality decreased to 6 respondents (23.1%). In the control group that did not receive treatment, before the measurement, the majority of respondents had poor sleep quality,

namely 25 respondents (96.2%), while good sleep quality was experienced by only 1 respondent (3.8%). After the second measurement, there was a slight increase in good sleep quality to 3 respondents (11.5%), but poor sleep quality still dominated with 23 respondents (88.5%).

Table 2 Results of Blood Pressure Normality Test

Group	Blood pressure	P value	Information
Intervention	Pre systolic	.049	Abnormal
	Post systolic	.037	Abnormal
	Pre-diastolic	.117	Normal
	Post diastolic	.090	Normal
Control	Pre systolic	.023	Abnormal
	Post systolic	.200	Normal
	Pre-diastolic	.148	Normal
	Post diastolic	.200	Normal

From table 5 it shows that the Normality Test using the Kolmogorov-Smirnov Test in the intervention group and the control group obtained several *p-value results* <0.05 (data is not normally distributed) because the data in this study is not normally distributed, so for hypothesis testing, a Non-Parametric Statistical Test is used, namely the *Wilcoxon Signed Rank k Test*.

Table 3 Results of Sleep Quality Normality Test

Variable	Group	P value	Information
Sleep Quality	Intervention	.054	Normal
	Control	.002	Abnormal

From table 6 it shows that the Normality Test uses the *Kolmogorov-Smirnov Test* in the intervention group *p-value* 0.05 (data is normally distributed) and the control group *p-value* <0.05 (data is not normally distributed) because there is data that is not normally distributed, so for hypothesis testing, a Non-Parametric Statistical Test is used, namely the *Mann-Whitney U Test*.

Table 4 Comparative Analysis of Systolic Blood Pressure

Group	Variables	P-Value
Intervention	Systolic Pretest	.002
	Posttest Systolic	
Control	Systolic Pretest	.602
	Posttest Systolic	

the *Wilcoxon Signed Rank Test* in Table 7, a significance value (*p-value*) of 0.002 was obtained in the intervention group. Since the *p-value* <0.05, it can be concluded that there is a significant difference between pretest and posttest systolic blood pressure in the intervention group, which indicates that gamelan music therapy has an effect on reducing systolic blood pressure. Meanwhile, in the control group, a *p-value* of 0.602 (*p*>0.05) was obtained, so it can be concluded that there is no significant difference between systolic blood pressure because no gamelan music therapy was given.

Table 5 Comparative Analysis of Diastolic Blood Pressure

Group	Variables	P-Value
Intervention	Diastolic Pretest	.000
	Posttest Diastolic	
Control	Diastolic Pretest	.000
	Posttest Diastolic	

Based on the results of the Wilcoxon Signed Rank Test in Table 8, a significance value (p-value) of 0.000 ($p < 0.05$) was obtained for both the intervention and control groups. This indicates a significant difference between diastolic blood pressure before and after treatment in both groups. However, because the control group did not receive gamelan music intervention, the changes that occurred in that group were likely influenced by factors other than the treatment, such as environmental or psychological factors. Meanwhile, in the intervention group, these results strengthen the hypothesis that gamelan music therapy contributed to a significant decrease in diastolic blood pressure.

Table 6 Comparative Analysis of Sleep Quality

Variables	p-value (sig.2-tailed)
Sleep quality	0.000

Based on the Mann-Whitney U test results in Table 9, the p-value was 0.000 ($p < 0.05$). This indicates a significant difference between sleep quality in the intervention and control groups. Therefore, it can be concluded that the intervention significantly improved sleep quality in the intervention group compared to the control group.

Table 10 Chi-Square Correlation Test Results

Variables	Sig.(P-Value)
Systole-Sleep Quality	0.025
Diastole-Sleep Quality	0.026

the Chi-Square test in Table 10, it is known that the significance value between systolic blood pressure and sleep quality is 0.025, and between diastolic blood pressure and sleep quality is 0.026. Since the P value < 0.05 , it can be concluded that there is a significant relationship between blood pressure (systolic and diastolic) and sleep quality.

Discussion

a. Age

Based on Table 4.1, there were 21 (80.8%) respondents aged 60-74 years in the intervention group, 5 (19.2%) respondents aged 74-90 years, while in the control group, there were 20 (76.9%) respondents aged 60-74 years, and 6 (23.1%) respondents aged 75-90 years. These findings align with the study by Astria & Ariani (2021), which showed that the majority of elderly people were in the 60-74 age group, with a total of 39 (84.8%). This age group is physiologically categorized as early elderly, a period during which significant biological changes begin to occur in the body, including those affecting the cardiovascular system and sleep patterns. The aging process results in disruption of body homeostasis and decreased organ function, one of which is a disturbance in the sleep system characterized by a decrease in slow wave sleep, an increase in stage 1 sleep (light sleep phase), and a reduction in the duration of NREM sleep stages 3 and 4. These changes can trigger poor sleep quality and chronic sleep disorders in the elderly have a negative impact on general health, including the risk of hypertension. (Wulandari et al., 2023).

Elderly people aged 60-74 are susceptible to high blood pressure due to reduced elasticity of the artery walls and the aorta's ability to adjust to blood volume and pressure (Ermawati et al. 2023). This is supported by research by Azwaldi et al. (2021), which explains that changes in vascular structure, such as thickening and hardening of blood vessel walls with aging, cause increased systolic and diastolic blood pressure. This process is part of the natural degeneration of the vascular system but significantly contributes to the risk of hypertension. According to Nuraeni (2019), the age group ≥ 45 years has a higher risk of hypertension compared to the age group < 45 years. This risk increases progressively with age due to a decline in blood pressure regulation function involving the autonomic nervous system, hormones, and baroreceptor responses. Over

time, elderly people also experience decreased sleep quality as a result of decreased sleep needs and efficiency. Rahmani et al. (2020) stated that 36 elderly people (66.0%) in the 60–74 age group experienced sleep disorders caused by physical and psychological changes that occur naturally with aging. According to data presented by Siburian (2024), sleep needs do indeed gradually decrease with age, from infants requiring up to 16 hours of sleep, to only about 6 hours per day for elderly people aged 60 and over. This short sleep duration can worsen blood pressure control and accelerate the onset of degenerative diseases, including hypertension.

Age is also recognized as one of the strongest determinants of hypertension. Syamsu et al. (2021) stated that advanced age is a major risk factor for hypertension, where blood pressure tends to increase linearly with age. This is in line with Sari's (2024) opinion, which explains that increased blood pressure in the elderly occurs due to changes in arterial structure, which becomes stiffer and wider, impeding blood flow, thus increasing systolic pressure. Furthermore, the aging process is also associated with neurohormonal disorders, such as increased activity of the renin-angiotensin-aldosterone (RAA) system, increased peripheral plasma concentrations, and the occurrence of glomerulosclerosis, all of which contribute to increased vasoconstriction and peripheral vascular resistance (Hanan & Ummah, 2024).

b. Gender

Based on the results of research conducted in Kujon Hamlet, the majority of respondents in both groups, both intervention and control, were women, each amounting to 16 (61.5%). According to research by Lorentina et al., (2024), the majority of respondents were elderly women aged 60 years and above, who are physiologically more susceptible to hypertension due to the decline in the hormone estrogen post-menopause. Estrogen is known to play a role in maintaining blood vessel elasticity and increasing HDL levels (good cholesterol), so its deficiency can increase the risk of hypertension. This is in line with research by Muhammad et al., (2021), which stated that women tend to suffer from hypertension compared to men. The results of this study showed that as many as 54% of women experienced hypertension, while for men only 39%. Women will experience an increased risk of high blood pressure (hypertension) after menopause, namely over the age of 45 years. This is reinforced by Lailatul et al. (2022) who stated that there is a relationship between gender and sleep quality in the elderly ($p=0.038$). Of the 374 respondents, the majority were women (326 people (87.2%). Gender significantly influences sleep quality in the elderly because they experience menopause and a decrease in estrogen hormones. This study aligns with the research of Saputra et al. (2021), which found that the majority of elderly women, 33 elderly (52.4%), had poor sleep quality. The high prevalence of poor sleep quality in women is due to menopause and changes in sex hormones. (Windyaningsih & Nirmalasari, 2024) .

c. Work

Based on the results of research conducted in Wonodoyo Village, the majority of respondents worked as farmers, both in the intervention and control groups. The intervention group worked as farmers as many as 23 respondents (88.5%), while in the control group there were 20 respondents (76.9%). This study is in line with the research of Pawestri (2019) which explains that the work of a farmer who always works in the rice fields will be more often exposed to sunlight and experience fatigue. Exposure to pesticides is a factor in increasing blood pressure. The entry of pesticides into the farmer's body inhibits the cholinesterase enzyme, causing the accumulation of acetylcholine in the blood vessels and increasing blood pressure (Wijayanti, AW, Suhartono, & Joko, 2020).

Work can influence hypertension because performing a lot of work, long hours, and poor working conditions can cause stress and anxiety. This can trigger high blood pressure. This can be explained by the fact that farmers spend more time or work longer hours on farming. Long working hours reduce sleep time, which can lead to psychological disorders and increased blood pressure (Milani, I., 2022).

d. Long time suffering from hypertension

Based on the results of research conducted in Wonodoyo Village, the duration of hypertension in both the intervention and control groups was > 5 years. The intervention group consisted of 14 respondents (53.8%), while the control group consisted of 13 respondents (50.0%). The results of this study are in line with the research of Proboningsih and Masamah Almahmudah (2019), which showed that the majority of respondents had suffered from hypertension for 5 to less than 10 years, namely 12 people (40%). This study is also supported by Rahmayanti (2018), who found that the proportion of respondents with a history of hypertension ≥ 5 years (75.4%) was higher than those who had hypertension ≤ 5 years. Long-term hypertension of more than five years can be caused by irregularity in taking medication and poorly controlled diet, thus prolonging the duration of the disease (Sintia et al., 2024).

According to research conducted by Pardede et al. (2020), the average duration of hypertension was 6.94 years. This long duration contributes to an increased incidence of anxiety, which in the long term can be a risk factor for hypertension complications. These results align with research by Sakinah et al. (2020), which states that the longer a person suffers from hypertension, the lower their adherence to self-management practices. This finding is supported by the opinion of Cahyani et al. (2021), who stated that boredom with long-term therapy and disappointment with treatment results that do not meet expectations are the causes of low adherence to hypertension treatment (Laila et al., 2025).

e. Comparison of Blood Pressure and Sleep Quality Before & After Gamelan Music Therapy

Based on table 4.2 shows the average blood pressure in the intervention group before (*pre-test*) gamelan music therapy was 169.00/99.12 mmHg and the average blood pressure after (*post-test*) gamelan music therapy was 160.27/81.23 mmHg. Meanwhile, table 4.3 shows the average blood pressure in the control group on the first day was 156.42/89.42 mmHg and on the fourth day was 154.46/82.50 mmHg. Based on table 4.4 shows the average sleep quality in the intervention group on the first day was 12.62 and on the last day was 4.31. while in the control group on the first day was 14.42 and on the last day was 8.81. The results of this study are in line with the results of research by Rosyidah et al (2024), where gamelan music therapy showed a significant decrease in blood pressure in hypertensive patients. Systolic blood pressure decreased by an average of 10.3 mmHg and diastolic blood pressure by an average of 4.3 mmHg after the intervention. These results align with the theory proposed by Dubey (2021), which states that non-pharmacological relaxation interventions can improve blood circulation through vasodilation, thus helping to naturally lower blood pressure. The intervention also resulted in improved sleep quality, as indicated by an average decrease in the *Pittsburgh Sleep Quality Index* (PSQI) score of 1.3 points. Respondents also reported feeling sleepier and calmer after listening to gamelan music titled "Kebo Giro" and "Tukung," which have slow tempos and tend to be calming. Slow tempo music can stimulate alpha brain waves, thereby creating a sense of relaxation and inducing sleepiness (Umah, K. and Twistiandayani, 2023).

f. The Relationship Between Lower Blood Pressure and Sleep Quality in Elderly People with Hypertension

Table 4.10 shows the results of the chi-square test on the relationship between blood pressure and sleep quality. The significance value between systolic blood pressure and sleep quality is 0.025, while the significance value between diastolic blood pressure and sleep quality is 0.026. Both values are below the 0.05 significance level, indicating a statistically significant relationship between blood pressure and sleep quality. These

findings indicate that uncontrolled blood pressure can impact sleep quality, making blood pressure management important to support good sleep quality.

These findings align with research conducted by Erlina et al. (2023), which found a significant relationship between sleep quality and blood pressure in the elderly. In the study, the majority of respondents (64 people) had poor sleep quality, and the majority of them (30 people) had stage 1 hypertension. The results of the bivariate analysis using the Spearman Rank test showed a p-value of 0.000 and a correlation coefficient of 0.585, indicating a strong and statistically significant relationship between sleep quality and blood pressure. This means that the poorer the sleep quality of the elderly, the higher the risk of increased blood pressure.

This reinforces the theory that inadequate sleep quality can lead to activation of the sympathetic nervous system and increased stress hormones such as cortisol, which then affect blood pressure regulation. This mechanism is a risk factor for hypertension in the elderly. This research aligns with other studies showing that sleep disturbances play a role in increased blood pressure and impaired cardiovascular function. This condition is common in the elderly, given the degenerative processes that affect sleep patterns, including decreased sleep duration and efficiency, and increased frequency of nighttime awakenings. Therefore, poor sleep quality in the elderly is an important factor that needs to be considered in efforts to prevent and manage hypertension. Therefore, interventions to improve sleep quality, such as education about healthy sleep patterns, regulating nighttime fluid intake, and routine blood pressure monitoring, are relevant and important steps in elderly healthcare (Maulana, 2021).

Music therapy is a non-pharmacological therapy that can be used to lower blood pressure through the stimulation of audible rhythms. Music can reduce stress hormones that can trigger high blood pressure. Music can influence the parasympathetic nervous system, which can relax the body, stretch the body, and slow the heart rate. The use of music therapy to lower high blood pressure in people with hypertension has been widely studied in several studies. The type of music used for therapy is tailored to the patient's needs, including classical, instrumental, slow music, orchestral, and modern music (Ramadhanti Khaliri, KP, & Waliyanti, 2023).

Gamelan music therapy works through physiological and psychological mechanisms. Gamelan music, with its slow tempo and harmonious rhythm, stimulates the primary and secondary auditory cortex in the brain, which then balances brain waves from beta (active) to alpha (calm) waves. These alpha waves are associated with a relaxed and comfortable state, which is essential for initiating sleep. Furthermore, gamelan music stimulates the parasympathetic nervous system and decreases sympathetic nervous activity, resulting in a more relaxed body and a lower heart rate. This effect is reinforced by the release of serotonin, endorphins, and enkephalins, which provide a sense of calm, reduce stress, and facilitate sleep. Gamelan music also has a positive emotional effect on the elderly because it can evoke past memories and provide inner peace. Thus, gamelan music is effective as a non-pharmacological therapy to improve sleep quality, especially in the elderly group with high blood pressure and prone to sleep disorders (Rosyidah & Supriani, 2023).

Acknowledgement

The author would like to express his gratitude to God Almighty for His grace and blessings so that this research could be successfully completed. The author would also like to thank Duta Bangsa University, Surakarta, for its support in carrying out this research. He would also like to thank the Health Research Ethics Commission of ITS PKU Muhammadiyah Surakarta for providing ethical approval so that this research could be carried out in accordance with the

principles of research ethics. The author would also like to thank the Wonodoyo Village Government, village officials, health cadres, and all respondents in Kujon Hamlet, Cepogo District, Boyolali Regency, who were willing to participate and provide support during the data collection process. He would also like to thank his supervisor, family, and all parties who have provided assistance, support, and motivation so that this research could be successfully completed.

References

- Boyolali, D. (2023). Boyolali Regency Health Profile 2020. Boyolali Regency Health Office, 156, 1–88. <https://katalog.data.go.id/dataset/jumlah-dan-persentase-pelayanan-kesehatan-penderita-hipertensi-2022>
- Djohan. (2020). *Psychology of Music*. Sleman, Yogyakarta: Kanisius.
- Hanan, A., & Ummah, K. (2024). Implementation of Slow Deep Breathing Therapy on Changes in Blood Pressure in the Elderly at the Arjuno Community Health Center, Malang City. *Journal of Health Science Media (JURMEDIKES)*, 2(2), 70–87.
- Islami, SA, Marisa, D., Kaidah, S., Muttaqien, F., & Illiandri, O. (2025). The Relationship Between Sleep Quality and Blood Pressure Levels in South Kalimantan Education and Culture Office Employees in 2023. *Homeostasis*, 7(3), 623-630.
- Juwita, D., Nulhakim, L., & Purwanto, E. (2023). The Relationship Between Anxiety and Insomnia in Pre-Elderly and Elderly People with Hypertension at the Elderly Posyandu in Tengkapak Village, Bulungan Regency. *Aspiration of Health Journal*, 1(2), 240–251. <https://doi.org/10.55681/aohj.v1i2.104>
- Laila, AZ, Asmarani, D., Sumardi, EPN, Ridwan, H., Nur'aeni, I., Boys, MDV, Pangistu, MA, Hakim, MNL, Anshori, MS, Rifdah, NRH, Sopiah, P., & Lestari, RP (2025). Literature Review: Medication Noncompliance in Hypertensive Patients: Analysis and Recommendations. *Scientific Journal of Nursing*, 11, 71–79.
- Lukitaningtyas, D., & Cahyono, EA (2023). Hypertension; Review Article. *Development of Health Science and Practice*, 2(2), 100-117.
- Maulana, N. (2021). Sleep Quality Education for Elderly Patients with Hypertension. *Journal of Community Care*, 3(3), 303–308. <https://doi.org/10.37287/jpm.v3i3.623>
- McCall, W.V. et al. (2021). Short-term insomnia disorder in health care workers in an academic medical center before and during COVID-19: Rates and predictive factors'. *Journal of Clinical Sleep Medicine*, 17(4), 749–755.
- Milani, I., & B. (2022). The Effect of Lavender Aromatherapy Intervention on Blood Pressure Stability in Hypertension Patients in Sidomulyo Village, Tabang District. *Borneo Student Research*, 3(3), 2716–2724.
- Mills KT et al. (2020). Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies From 90 Countries. *Circulation*. 134, 441–450.
- Muzaenah, T. et al. (2024). 'Early Detection as a Preventive Effort for Hypertension and Diabetes Mellitus Through the Pojok Sate Gurah Program.' *Indonesian Journal of Innovation and Community Service*, 3(1).
- Nanik Yuniarti, Prasanti Adriani, & Suci Khasanah. (2024). The Effect of Gamelan Music Therapy on Sleep Quality of the Elderly in Bateran Village, Sumbang District, 2021. *Scientific Journal of Public Health and Social Affairs*, 2(2), 45–57. <https://doi.org/10.59024/jikas.v2i2.731>
- Ramadhanti Khaliri, KP, & Waliyanti, E. (2023). The Effectiveness of Campursari Music Therapy in Reducing Blood Pressure in Elderly Patients with Hypertension: A Case Study. *Syntax Fusion Journal*, 3(06), 639–648.
- Resya Dwi, P. (2024). The Relationship between Self-Management Behavior and Medication Compliance in Elderly Hypertension Patients at Pindad General Hospital, Bandung. Diss. Mohammad Husni Thamrin University.
- Ruswadi, Indra, Supriatun, E. (2022). *Gerontic Nursing: Practical Knowledge for Nurses and Nursing Students*. 1st ed. Indramayu: Adab Publisher.

- Rosyidah, NN, & Supriani, A. (2023). THE EFFECTIVENESS OF GAMESAN MUSIC AND KERONCONG MUSIC ON SLEEP QUALITY IN THE ELDERLY IN DSN. LENGKONG DS. LENGKONG DISTRICT, MOJOANYAR DISTRICT, MOJOKERTO REGENCY: The Effectiveness of Karawitan Uyon Music–Uyon and Instrumental Music on Sleep Quality in The Elderly at Dusun L. Scientific Journal of Nursing, 9(2), 504–511.
- Sashikirana, A., Setyo Upoyo, A., & Triyanto, E. (2024). The Effect of Foot Massage and Gamelan Music Therapy on Blood Pressure, Heart Rate, and Sleep Quality in Hypertensive Patients. Journal of Community Health Development, 5(2), 69–77. <http://jos.unsoed.ac.id/index.php/jchd>
- Sintia, F., Ikdafile, Fatmawati, Darwis, N., Ruslang, & Arni, A. (2024). The Relationship Between Knowledge and Duration of Hypertension and Diet Compliance in the Lempa Community Health Center Work Area. 6, 1–9. <https://ojs.univprima.ac.id/index.php/mappadising>
- Umah, K. and Twistiandayani, R. (2023). 'The Effect of Javanese Gamelan Music Therapy on the Level of Insomnia Reduction in the Elderly.' Journal of Multidisciplinary Research, 2(6), 37–46.
- Widiyanto Aris, Joko Tri Atmojo, Asruria Sani Fajriah, Santy Irene Putri, PSA (2020). Health Education for Hypertension Prevention. Empathy Journal of Community Service. <https://doi.org/DOI: 10.37341/jurna lempathy. V 1i2.27>
- Wijayanti, AW, Suhartono, & Joko, T. (2020). Study of the Prevalence of Hypertension in Farmers in Candi Hamlet, Bandung District, Semarang Regency. Indonesian Public Health Media, 19(2), 94–99.
- Windyaningsih, P., & Nirmalasari, RA (2024). Female Sexual Dysfunction Affects Quality of Life During Menopause. Jurnal Akta Trimedika, 1(2), 155–165. <https://doi.org/10.25105/aktatrimaktat.v1i2.19635>
- WHO. (2022). Aging and Health. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>
- Wulandari, E., Nasution, RA, & Sari, YIP (2023). The Relationship between Sleep Quality and Cognitive Function of the Elderly at Muara Kumpe Community Health Center. Indonesian Nursing Scientific Journal, 4(1), 134–144. <https://doi.org/10.22437/jini.v4i1.25253>