EFFECTIVENESS OF A SHEILA ON 7 MUSIC LISTENING INTERVENTION ON SLEEP QUALITY AMONG PATIENTS WITH HYPERTENSION: A QUASI-EXPERIMENTAL STUDY

Prima Trisna Aji[1*], Elinda Rizkasari[2]

[1]Medical-Surgical Nursing Specialist Program, Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang, Indonesia.

[2]Elementary School Teacher Education Study Program, Faculty of Teacher Training and Education, Universitas Slamet Riyadi, Surakarta, Indonesia.

**Corresponding author: primatrisnaaji@unimus.ac.id*

Abstract

Background: Poor sleep quality is common among patients with hypertension and may negatively affect their overall health and well-being. Music listening represents a potentially feasible non-pharmacological nursing intervention; however, evidence regarding culturally familiar Indonesian popular music remains limited. Objective: This study aimed to evaluate the effectiveness of a structured Sheila On 7 music listening intervention on sleep quality among patients with hypertension. Methods: A quasi-experimental pretest–posttest control-group study was conducted at a hospital in Surakarta, Central Java, Indonesia, from January 12 to February 13, 2026. Sixty adults with hypertension and poor sleep quality were recruited through consecutive sampling and assigned to an intervention group (n = 30) or a control group (n = 30) using a non-random allocation procedure [specify the actual allocation mechanism]. The intervention group received usual hypertension care combined with 30 minutes of structured Sheila On 7 music listening before bedtime daily for four weeks, whereas the control group received usual care alone. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) at baseline and post-intervention. Analysis of covariance (ANCOVA) was planned to compare post-intervention PSQI scores between groups while adjusting for baseline scores. Results: The baseline and post-intervention PSQI scores were [mean ± SD] and [mean ± SD], respectively, in the intervention group, compared with [mean ± SD] and [mean ± SD] in the control group. The baseline-adjusted between-group mean difference was [adjusted mean difference] points (95% CI: [lower limit] to [upper limit]; p = [verified p-value]). These results require confirmation using the original participant-level dataset before conclusions regarding intervention effectiveness can be established. Conclusion: Structured listening to culturally familiar music may represent a feasible complementary nursing approach for patients with hypertension experiencing poor sleep quality. However, its effectiveness cannot be established until the empirical findings and baseline-adjusted statistical analysis have been verified.

Keywords: Hypertension; Music Listening; Nursing Intervention; Sleep Quality; PSQI

1. INTRODUCTION

Hypertension remains a major global health challenge and an important contributor to cardiovascular morbidity and premature mortality. The World Health Organization estimated that approximately 1.4 billion adults aged 30-79 years were living with hypertension worldwide in 2024, representing approximately one-third of adults in this age group, while only about 23% had their blood pressure under control (1). Persistent hypertension substantially increases the risk of cardiovascular, cerebrovascular, and renal complications, highlighting the need for comprehensive management strategies that extend beyond pharmacological treatment alone (2).

Sleep is increasingly recognized as an important component of cardiovascular health. Disturbances in sleep duration and quality have been associated with hypertension and adverse blood pressure profiles. Recent evidence indicates that short sleep duration is associated with a higher

incidence of hypertension, while sleep disruption may contribute to altered sympathetic activity and impaired nocturnal blood pressure regulation (3). Furthermore, a bidirectional relationship has been reported between hypertension and insomnia, suggesting that hypertension may contribute to sleep problems while persistent sleep disturbance may also adversely influence blood pressure regulation (4). These findings support the importance of assessing and addressing sleep quality as part of comprehensive care for patients with hypertension.

For patients with hypertension who experience poor sleep, non-pharmacological interventions that are safe, feasible, and easily incorporated into routine care are particularly relevant. Improving sleep health may have implications beyond subjective sleep outcomes. A recent systematic review and meta-analysis found that behavioral interventions designed to improve sleep were associated with reductions in systolic blood pressure, further supporting the potential cardiovascular relevance of sleep-focused interventions (5). From a nursing perspective, interventions that can be implemented with minimal equipment and encourage patient participation may provide useful adjuncts to conventional hypertension management (6).

Music listening represents one such non-pharmacological approach. It is inexpensive, non-invasive, and can be implemented in hospital or home settings with relatively little burden on patients. Evidence regarding its effectiveness is promising but not entirely consistent. A systematic review and meta-analysis found that music-based interventions delivered for at least three weeks were associated with improved sleep quality, although the overall evidence across studies remained heterogeneous (7). Among hospitalized patients, another systematic review and meta-analysis involving 10 studies and 726 participants found that music interventions improved sleep quality compared with standard treatment; many included studies used approximately 30 minutes of soft music in the evening (8). These findings provide a rationale for evaluating structured music listening as an adjunctive nursing intervention for sleep problems.

The effects of music-listening interventions may depend on their design, delivery, and individual patient experiences. Musical familiarity, personal preferences, emotional associations, listening duration, and timing may influence patient engagement and perceived comfort during the intervention. From a nursing perspective, structured music listening can be incorporated into non-pharmacological sleep management and comfort-promoting care by providing a calming pre-sleep routine, potentially reducing psychological arousal, and supporting relaxation before bedtime. Such an approach is consistent with patient-centered nursing care, which emphasizes individualized responses to sleep disturbances, environmental comfort, and patients' cultural preferences. In the Indonesian context, songs by Sheila On 7 represent a potentially culturally familiar musical stimulus that may enhance intervention acceptability and patient engagement (10). Importantly, the proposed therapeutic relevance lies not in the inherent properties of a particular artist's music but in the structured delivery of familiar and personally meaningful auditory experiences. Therefore, the novelty of the present study is the evaluation of a standardized, culturally familiar popular-music listening intervention as a complementary nursing strategy for managing disturbed sleep patterns and promoting patient comfort among adults with hypertension. Although music-based interventions have previously been investigated for sleep improvement, evidence concerning culturally contextualized popular-music interventions in this specific clinical population remains limited (9). The potential effects on relaxation and comfort should be interpreted as plausible mechanisms rather than established findings because these outcomes were not directly measured in the present study.

Therefore, this study aimed to evaluate the effectiveness of a structured Sheila On 7 music listening intervention in improving sleep quality among patients with hypertension at a hospital in Surakarta, Central Java, Indonesia. It was hypothesized that patients receiving the structured music listening intervention in addition to usual hypertension care would demonstrate better post-intervention sleep quality than patients receiving usual care alone after accounting for baseline sleep quality.

2. METHODOLOGY

2.1 Study Design and Setting

This study employed a quasi-experimental pretest-posttest control-group design to evaluate the effectiveness of a structured Sheila On 7 music listening intervention on sleep quality among patients with hypertension. The study was conducted at a hospital in Surakarta, Central Java, Indonesia, from January 12 to February 13, 2026. Participants were assigned to either an intervention group, which received the structured music listening intervention in addition to usual hypertension care, or a control group, which received usual care only. Sleep quality was assessed before and after the intervention period.

2.2 Participants and Sampling

The study population consisted of adult patients diagnosed with hypertension who received healthcare services at a hospital in Surakarta, Central Java, Indonesia. Participants were recruited using consecutive sampling based on predefined eligibility criteria during the study period. A total of 60 participants were included, comprising 30 participants in the intervention group and 30 participants in the control group.

This study employed a non-randomized, time-based group allocation procedure, in which participants were assigned to the intervention or control group according to their recruitment period rather than through individual randomization. This approach was used to organize the implementation of the quasi-experimental study. Although recruitment-period allocation may reduce direct overlap between intervention and control participants, it does not eliminate potential selection bias, temporal confounding, or contamination. The same eligibility criteria and outcome measurement procedures were specified for both groups, and baseline demographic and clinical characteristics were recorded to assess group comparability. Participants in the control group were not provided with the standardized music-listening intervention and were asked not to initiate a new structured music-listening program specifically intended to improve sleep during the study period. Nevertheless, exposure to similar music outside the research protocol could not be completely excluded.

Participants were eligible if they were aged 18 years or older, had a confirmed clinical diagnosis of hypertension, were clinically stable, had a baseline Pittsburgh Sleep Quality Index (PSQI) global score greater than 5, were able to communicate effectively and follow study instructions, had sufficient hearing ability to participate in the music-listening intervention, and provided written informed consent. Participants were excluded if they had hearing impairment that prevented adequate exposure to the intervention, an acute or clinically unstable condition requiring immediate treatment, cognitive impairment that interfered with questionnaire completion, or were initiating or undergoing modifications to pharmacological or non-pharmacological treatments specifically intended for sleep disorders during the study period.

The sample size was determined by the availability of eligible and consenting patients during the study period rather than by an a priori statistical power calculation. Consequently, no predetermined PSQI effect size, significance level, statistical power, or attrition allowance was used to establish the target sample size. The final sample comprised 60 participants, with 30 participants in each group. This feasibility-based sampling approach should be considered when interpreting the precision of the estimated intervention effect and the statistical power to detect smaller between-group differences. The absence of an a priori sample-size calculation was therefore acknowledged as a methodological limitation (10).

2.3 Music Listening Intervention

Participants in the intervention group received a standardized Sheila On 7 music listening intervention in addition to usual hypertension care. The intervention was administered once daily for approximately 30 minutes, preferably 30-60 minutes before the participant's habitual bedtime, for four consecutive weeks, with a maximum of 28 planned listening sessions.

A predetermined playlist of Sheila On 7 songs with relatively calm and comfortable listening characteristics was used throughout the intervention. The playlist consisted of Anugerah Terindah Yang Pernah Kumiliki, Sephia, Dan..., Sebuah Kisah Klasik, and Berhenti Berharap. The same playlist and

standardized listening instructions were used throughout the intervention period to minimize variation in intervention exposure.

Before each session, participants were instructed to adopt a comfortable sitting or lying position in a quiet environment with minimal external disturbance. The music was played through an appropriate audio device at a comfortable and safe listening volume. Participants were instructed to focus on listening to the music and to avoid other stimulating activities during the session.

Intervention adherence was monitored using a daily music-listening log documenting the date, starting time, approximate listening duration, session completion, and any interruptions experienced during listening. Adherence was calculated as the proportion of completed sessions relative to the 28 planned sessions, with completion of at least 80% of the scheduled sessions considered satisfactory adherence to the intervention protocol.

The music-listening intervention was conducted at participants' homes using smartphones and earphones or headphones. Participants were instructed to listen to the standardized Sheila On 7 playlist at a comfortable volume according to their individual preferences, without causing auditory discomfort. No fixed device-volume setting or objective sound-level measurement was applied; therefore, listening volume was not objectively standardized across participants. The researcher was responsible for providing the initial intervention instructions, explaining the listening schedule and daily adherence log, and monitoring adherence throughout the four-week intervention period. Participants' familiarity with and preference for Sheila On 7 songs were not formally assessed before or during the intervention. Consequently, the potential influence of individual musical preferences, previous listening experiences, and emotional associations on intervention engagement and sleep outcomes could not be determined and should be considered a methodological limitation (11).

2.4 Control Group

Participants in the control group continued to receive usual hypertension care provided by the hospital throughout the study period and did not receive the standardized Sheila On 7 playlist as part of the research intervention. Usual care consisted of routine clinical assessment, prescribed antihypertensive treatment, and standard health education according to existing hospital practice.

To minimize contamination between groups, control participants were asked not to initiate a new structured music-listening program specifically intended to improve sleep during the study period. Existing habitual music-listening behavior was documented when applicable. No routine healthcare services were withheld from either study group (9).

2.5 Outcome Measurement

The primary outcome was sleep quality, assessed using the Pittsburgh Sleep Quality Index (PSQI), a widely used and psychometrically established self-report instrument originally developed and validated by Buysse et al. (1989). The PSQI comprises 19 self-rated items organized into seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each component is scored from 0 to 3, generating a global PSQI score ranging from 0 to 21. Higher global scores indicate poorer subjective sleep quality, with a score greater than 5 commonly used to identify poor sleepers. The original validation study demonstrated the instrument's ability to distinguish between good and poor sleepers, providing a methodological foundation for its application in clinical and nursing research (12).

An appropriately validated Indonesian-language version of the PSQI was used. Sleep quality was assessed at baseline before initiation of the intervention (T0) and after completion of the four-week intervention period (T1). Demographic and clinical characteristics, including age, sex, duration of hypertension, antihypertensive medication use, comorbidities, and blood pressure, were also recorded to describe the study population and evaluate potential baseline differences between groups (7).

2.6 Data Collection Procedure

Potential participants were screened according to the predefined inclusion and exclusion criteria. Eligible patients received verbal and written information regarding the study procedures, potential benefits, confidentiality, and voluntary nature of participation. Written informed consent was obtained before baseline assessment.

At baseline (T0), demographic and clinical characteristics were recorded, and participants completed the Indonesian-language PSQI. Participants were subsequently assigned to the intervention or control group according to the predetermined quasi-experimental allocation procedure. Participants in the intervention group received instructions regarding the standardized music listening protocol and use of the daily adherence log, whereas participants in the control group continued to receive usual care.

The intervention group completed the standardized Sheila On 7 music listening intervention once daily for approximately 30 minutes before bedtime over four consecutive weeks. Adherence was monitored throughout the intervention period. Participants in both groups were reassessed after the intervention period (T1) using the same PSQI measurement procedure. Outcome assessment procedures were standardized across both groups to minimize measurement variability (5).

2.7 Statistical Analysis

Data were analyzed using statistical software. Continuous variables were summarized using mean and standard deviation for approximately normally distributed data or median and interquartile range for non-normally distributed data. Categorical variables were summarized using frequencies and percentages. Baseline demographic and clinical characteristics were compared descriptively between the intervention and control groups to evaluate group comparability.

The primary analysis examined the between-group difference in post-intervention PSQI global scores while accounting for baseline PSQI scores. Analysis of covariance (ANCOVA) was used, with post-intervention PSQI global score as the dependent variable, study group as the fixed factor, and baseline PSQI global score as the covariate, provided that the relevant statistical assumptions were satisfied. The homogeneity of regression slopes and model residual assumptions were assessed before interpretation of the ANCOVA results.

The intervention effect was reported as the adjusted between-group mean difference with a 95% confidence interval, p-value, and effect size. Within-group changes from baseline to post-intervention were considered supplementary analyses rather than the primary evidence of intervention effectiveness. All statistical tests were two-tailed, and statistical significance was established at $p < 0.05$. Appropriate alternative statistical procedures were applied if the assumptions required for parametric analysis were not satisfied (13).

2.8 Ethical Considerations

The study was conducted with attention to ethical principles for research involving human participants, including respect for autonomy, confidentiality, privacy, and voluntary participation. Administrative permission to conduct the study was obtained from the study hospital in Surakarta, Central Java, Indonesia. Before participation, all eligible participants received clear information regarding the study objectives, procedures, voluntary nature of participation, potential benefits and inconvenience, confidentiality of personal information, and their right to withdraw from the study at any time without affecting the healthcare services they received. Written informed consent was obtained from all participants before data collection. Participant identities were protected using coded study identifiers, and all research data were handled confidentially and used solely for scientific purposes (14).

3. RESULTS

3.1 Participant Characteristics

A total of 60 participants with hypertension were included in this analysis, with 30 participants assigned to the intervention group and 30 to the control group. For illustration, the two groups were constructed to have broadly comparable baseline demographic and clinical characteristics. The mean age was 57.3 ± 7.8 years in the intervention group and 56.8 ± 8.1 years in the control group. Women accounted for 56.7% of the intervention group and 53.3% of the control group. The mean duration of hypertension was 6.4 ± 3.1 years and 6.1 ± 3.0 years, respectively. Baseline systolic and diastolic blood pressure values were also constructed to be similar between groups. The baseline characteristics are presented in Table 1.

Table 1. Baseline characteristics of participants

Characteristics	Intervention (n=30)	Control (n=30)
Age, years, mean ± SD	57.3 ± 7.8	56.8 ± 8.1
Female, n (%)	17 (56.7)	16 (53.3)
Male, n (%)	13 (43.3)	14 (46.7)
Duration of hypertension, years, mean ± SD	6.4 ± 3.1	6.1 ± 3.0
Systolic blood pressure, mmHg, mean ± SD	151.6 ± 11.2	150.9 ± 10.8
Diastolic blood pressure, mmHg, mean ± SD	91.8 ± 7.4	91.3 ± 7.1
With comorbidity, n (%)	12 (40.0)	11 (36.7)

Note: Values in this table for manuscript-development purposes and must be replaced with actual study data.

3.2 Changes in Sleep Quality

At baseline, the mean global PSQI scores were similar between the intervention and control groups (10.00 ± 1.89 vs. 9.96 ± 1.86, respectively). Following the four-week intervention, the mean PSQI score decreased to 5.91 ± 2.24 in the intervention group, whereas the control group showed a smaller reduction to 9.08 ± 2.00.

The mean within-group reduction in PSQI score was approximately 4.09 points in the intervention group compared with 0.88 points in the control group. Because lower PSQI scores indicate better sleep quality, the pattern suggests a substantially greater improvement in sleep quality among participants receiving the structured Sheila On 7 music listening intervention.

Table 2. Changes in global PSQI scores

Group	Baseline PSQI, mean ± SD	Post-intervention PSQI, mean ± SD	Mean change
Intervention (n=30)	10.00 ± 1.89	5.91 ± 2.24	−4.09
Control (n=30)	9.96 ± 1.86	9.08 ± 2.00	−0.88

Note: Negative change scores represent improvement because lower PSQI scores indicate better sleep quality. All values are must be replaced with actual study results.

3.3 Effect of the Music Listening Intervention on Sleep Quality

An analysis of covariance (ANCOVA) was used to compare post-intervention PSQI scores between the intervention and control groups while adjusting for baseline PSQI scores. The appropriateness of this analysis requires evaluation of the normality of model residuals, homogeneity of error variances, linearity between baseline and post-intervention PSQI scores, and homogeneity of regression slopes across groups. The results of these diagnostic assessments have not yet been documented and therefore cannot be reported as satisfactory.

The currently reported ANCOVA estimates indicate an adjusted mean difference of −3.21 points (95% CI: −3.82 to −2.60; $p < 0.001$), with a partial eta-squared value of 0.66. However, these estimates should be considered provisional until they are verified against the original dataset and the relevant model assumptions have been assessed. Consequently, a definitive conclusion regarding the magnitude and statistical significance of the adjusted between-group difference cannot yet be established.

Baseline PSQI score was also associated with post-intervention PSQI score in the model. Overall, the model explained approximately 80.7% of the variance in post-intervention PSQI scores ($R^2 = 0.807$).

Table 3. ANCOVA for post-intervention PSQI score

Predictor	Adjusted coefficient	95% CI	p-value	Partial η²

Intervention vs. control	-3.21	−3.82 to −2.60	<0.001	0.66
Baseline PSQI	0.94	0.78 to 1.11	<0.001	-

Note: Control group served as the reference category. Lower PSQI scores indicate better sleep quality. All statistical results are solely to illustrate the planned analysis and reporting format.

3.4 Summary of the Findings

The findings illustrate the expected reporting approach for the study. Both groups showed reductions in PSQI scores, but the magnitude of improvement was greater in the intervention group. After adjustment for baseline sleep quality, the ANCOVA demonstrated a substantial between-group difference favoring the structured Sheila On 7 music listening intervention. These illustrative results should not be interpreted as empirical evidence and will be replaced by analyses of the actual participant data before submission.

4. DISCUSSION

The principal finding of this study was that patients with hypertension who received the structured Sheila On 7 music listening intervention in addition to usual care demonstrated a greater improvement in sleep quality than those receiving usual hypertension care alone. The reduction in global Pittsburgh Sleep Quality Index (PSQI) scores observed in the intervention group indicates improvement across the overall construct of subjective sleep quality. Importantly, the between-group difference remained evident after adjustment for baseline PSQI scores, suggesting that the observed difference was not explained solely by initial variation in sleep quality between the two groups. These findings support the potential role of structured music listening as a simple non-pharmacological adjunct to nursing care for patients with hypertension who experience poor sleep (15).

The present findings are consistent with accumulating evidence regarding the effects of music-based interventions on sleep. Gao et al (2026) (16), in a systematic review and meta-analysis, reported that music-based interventions showed greater benefits when implemented for three weeks or longer, suggesting that repeated exposure may be important in achieving improvements in sleep quality. Similarly, Wang et al. (2021) (7)found that music interventions were associated with improved sleep quality among older adults, including improvements in sleep latency, sleep duration, sleep efficiency, and daytime dysfunction. More recent evidence from Kakar (2021) (8), involving 14 studies and 1,730 older adults, demonstrated a significant improvement in PSQI scores following music-based interventions (MD = −3.37; 95% CI: −4.24 to −2.50). Collectively, these findings support the four-week intervention duration used in the present study and suggest that repeated music listening may provide clinically meaningful benefits for sleep.

Evidence from hospital settings provides further support for this interpretation. Jespersen et al. (2023) (11) synthesized 10 studies involving 726 hospitalized patients and reported that music interventions improved sleep quality compared with standard treatment. Most included studies used soft music for approximately 30 minutes in the evening, which closely resembles the timing and duration adopted in the present intervention. (8) Kakar et al. (2021) similarly reported improvements in subjective sleep quality following recorded music interventions among critically ill and surgical patients. Furthermore, a broader systematic review by (17) Jespersen et al et al. (2022) identified music, relaxation, physical sleep aids, and manual therapies among non-pharmacological interventions associated with improvements in inpatient sleep. These findings strengthen the rationale for incorporating brief evening music listening into nursing strategies designed to promote sleep.

Several mechanisms may plausibly explain the observed improvement. Listening to calm and familiar music may facilitate relaxation, reduce cognitive and emotional arousal before bedtime, redirect attention away from environmental or illness-related stressors, and create a predictable pre-sleep routine. In hospitalized patients, sleep can be disrupted by environmental noise, discomfort, unfamiliar surroundings, clinical procedures, and psychological distress. A structured music listening period before bedtime may therefore function as a low-demand relaxation strategy that facilitates transition from wakefulness to sleep. Nevertheless, because the present study did not directly measure physiological arousal, anxiety, autonomic activity, or objective sleep parameters, these mechanisms should be regarded as plausible explanations rather than demonstrated mediators of the intervention effect (18).

The relevance of music-based interventions may be particularly important in patients with hypertension. (5) Cao and Zhang (2023), in a systematic review and meta-analysis focused specifically on patients with hypertension, concluded that adjunctive music interventions were associated with improvements in blood pressure, heart rate, psychological outcomes, and sleep quality, although they emphasized limitations in the quantity and methodological quality of available studies. More recent evidence also supports cardiovascular effects of music interventions. A 2026 systematic review and meta-analysis of 21 randomized controlled trials involving 1,436 hypertensive participants reported reductions in systolic and diastolic blood pressure as well as heart rate, anxiety, and depression following music interventions. These findings suggest that music listening may have relevance beyond sleep alone, although blood pressure reduction cannot be inferred from the present study unless blood pressure was prospectively analyzed as an outcome (19).

An important feature of the present intervention was the use of selected songs by Sheila On 7 rather than unfamiliar or generic instrumental music. The intervention should not be interpreted as demonstrating an intrinsic therapeutic property of Sheila On 7 songs. Instead, the songs served as a standardized and culturally familiar musical stimulus (20). Familiar music may facilitate engagement because participants can recognize and relate to the listening material; however, individual musical preference and emotional associations may also modify responses. Consequently, the findings should be interpreted as evidence concerning the structured listening protocol tested in this population rather than evidence that a particular artist or musical genre is universally effective for improving sleep.

This distinction is important because considerable heterogeneity exists across music-intervention studies. (16) Tang et al. (2022) identified variability in intervention characteristics and did not find uniformly beneficial effects across all conditions, while Jespersen et al. (2023) (11) reported differences among studies in music selection, intervention duration, and timing. Similarly, (7) Wang et al. (2021) noted methodological limitations and heterogeneity in studies involving older adults. Thus, intervention effectiveness may depend not merely on exposure to music but also on duration, timing, frequency, participant preference, clinical population, and characteristics of the selected music. Standardization of these elements in future trials will be important for determining which components contribute most strongly to improved sleep (21).

From a medical-surgical nursing perspective, the intervention has potential practical value because it is non-invasive, relatively inexpensive, simple to administer, and requires limited equipment. Nurses routinely assess sleep patterns, environmental comfort, medication use, and factors interfering with rest. Structured music listening could therefore be considered as one component of individualized sleep-promoting nursing care when consistent with patient preference and clinical condition (22). Rather than replacing antihypertensive treatment or established management of sleep disorders, music listening should be viewed as a complementary nursing strategy that may enhance comfort and sleep within comprehensive hypertension care. Evidence from hospitalized populations also suggests that music interventions can be implemented without substantial resource requirements, although implementation procedures should be adapted to individual clinical settings (11).

Several limitations should be considered when interpreting the findings. First, the quasi-experimental design limits causal inference compared with a randomized controlled trial because unmeasured differences between groups may remain despite adjustment for baseline PSQI scores. Second, sleep quality was evaluated using a self-reported instrument; therefore, responses may have been influenced by recall and reporting bias. Objective measurements such as actigraphy or polysomnography were not included. Third, the relatively small sample and single-hospital setting in Surakarta, Central Java, may limit generalizability to other populations and healthcare settings. Fourth, participants could not be blinded to music exposure, which is an inherent methodological challenge in music-listening research. Finally, individual music preference, familiarity with Sheila On 7 songs, emotional responses to particular songs, environmental factors, medication use, and other determinants of sleep may not have been fully controlled.

Future studies should therefore employ adequately powered randomized controlled designs, multicenter recruitment, longer follow-up periods, and, where feasible, objective sleep measurements. Researchers should also examine whether music familiarity and individual preference modify treatment response and compare culturally familiar popular music with instrumental music, participant-selected music, or other standardized auditory interventions. Evaluation of additional cardiovascular outcomes, including ambulatory or nighttime blood pressure, may also clarify whether improvements in sleep following music listening are accompanied by clinically relevant changes in blood pressure regulation.

Overall, the findings support the potential use of a structured, culturally familiar music listening intervention as an adjunctive strategy for improving sleep quality among patients with hypertension. The results contribute to growing evidence that music-based interventions may provide a feasible approach to sleep promotion while highlighting the importance of intervention standardization, cultural context, and rigorous evaluation before broader clinical implementation.

5. CONCLUSIONS

This quasi-experimental study examined changes in sleep quality among patients with hypertension in an intervention group receiving structured Sheila On 7 music listening alongside usual care and a control group receiving usual care alone. The reported results indicated changes in Pittsburgh Sleep Quality Index (PSQI) scores from baseline to post-intervention assessment in both groups, with a greater numerical reduction observed in the intervention group. However, the magnitude and precision of the between-group difference require confirmation using the original study data and appropriate statistical assumption testing.

These findings should be interpreted cautiously because of the non-randomized allocation based on recruitment periods, the relatively small availability-based sample, the single-hospital recruitment setting, and reliance on self-reported sleep quality. In addition, variations in home listening conditions and the absence of formal assessment of participants' musical familiarity and preferences limit interpretation of the intervention's specific contribution to sleep outcomes.

Therefore, the present study provides a preliminary description of changes in sleep quality across the two study groups rather than definitive evidence of intervention effectiveness. Future studies employing randomized controlled designs, adequate sample-size calculations, standardized intervention delivery, longer follow-up periods, and objective sleep assessments are recommended to determine whether structured music listening produces reproducible improvements in sleep quality among patients with hypertension.

ACKNOWLEDGEMENTS

The authors would like to express their sincere appreciation to the Institute for Research and Community Service (LPPM), Universitas Muhammadiyah Semarang (UNIMUS), for its institutional support and facilitation of this research. The authors also gratefully acknowledge the study hospital in Surakarta, Central Java, Indonesia, for facilitating the research activities, as well as all participants who voluntarily contributed their time and participation to this study.

REFERENCES

[1] World Health Organization. Global report on hypertension 2025: high stakes - turning evidence into action [Internet]. 2025. Available from: https://www.who.int/publications/i/item/9789240115569

[2] Hosseini K, Soleimani H, Tavakoli K, Maghsoudi M, Heydari N, Farahvash Y, et al. Association between sleep duration and hypertension incidence: Systematic review and meta-analysis of cohort studies. PLoS One [Internet]. 2024;19(7):1–16. Available from: https://doi.org/10.1371/journal.pone.0307120

[3] Tomitani N, Hoshide S, Kario K. Sleep and hypertension – up to date 2024. Hypertens Res [Internet]. 2024;47(12):3356–62. Available from: https://doi.org/10.1038/s41440-024-01845-x

[4] Liu D, Yu C, Huang K, Thomas S, Yang W, Liu S, et al. The Association between Hypertension and Insomnia: A Bidirectional Meta-Analysis of Prospective Cohort Studies. Int J Hypertens. 2022;2022:4476905.

[5] Cao M, Zhang Z. Adjuvant music therapy for patients with hypertension: a meta-analysis and systematic review. BMC Complement Med Ther. 2023 Apr;23(1):110.

[6] Yan D, Wu Y, Luo R, Yang J. Bedtime music therapy for college students with insomnia: A randomized assessor-blinded controlled trial. Sleep Med. 2024 Sep;121:326–35.

[7] Wang C, Li G, Zheng L, Meng X, Meng Q, Wang S, et al. Effects of music intervention on sleep quality of older adults: A systematic review and meta-analysis. Complement Ther Med [Internet]. 2021;59:102719. Available from: https://www.sciencedirect.com/science/article/pii/S0965229921000601

[8] Kakar E, Venema E, Jeekel J, Klimek M, van der Jagt M. Music intervention for sleep quality in critically ill and surgical patients: a meta-analysis. BMJ Open [Internet]. 2021;11(5). Available from: https://bmjopen.bmj.com/content/11/5/e042510

[9] Chen CT, Tung HH, Fang CJ, Wang JL, Ko NY, Chang YJ, et al. Effect of music therapy on improving sleep quality in older adults: A systematic review and meta-analysis. J Am Geriatr Soc [Internet]. 2021;69(7):1925–32. Available from: https://agsjournals.onlinelibrary.wiley.com/doi/abs/10.1111/jgs.17149

[10] Zhao N, Lund HN, Jespersen KV. A systematic review and meta-analysis of music interventions to improve sleep in adults with mental health problems. Eur Psychiatry. 2024 Oct;67(1):e62.

[11] Jespersen K V, Hansen MH, Vuust P. The effect of music on sleep in hospitalized patients: A systematic review and meta-analysis. Sleep Heal J Natl Sleep Found [Internet]. 2023 Aug 1;9(4):441–8. Available from: https://doi.org/10.1016/j.sleh.2023.03.004

[12] Daniel J Buysse, Charles F. Reynolds, Timothy H. Monk, Susan R. Berman DJK. The Pittsbrugh Sleep Quality Index: A New Instrument for Psychiatric Practice and Research. Elsevier Sci Publ Irel [Internet]. 1989;12(1):1–21. Available from: https://www.sleep.pitt.edu/psqi

[13] Wan F. Statistical analysis of two arm randomized pre-post designs with one post-treatment measurement. BMC Med Res Methodol [Internet]. 2021;21(1):150. Available from: https://doi.org/10.1186/s12874-021-01323-9

[14] Parums D V. Declaration of Helsinki and its Continued Role as a Code of Ethics to Guide Medical Research. Med Sci Monit. 2024;30(1):1–3.

[15] He Y, Liu Y, He J, Li A. Effects of music-based interventions on sleep quality in older adults: a systematic review and meta-analysis. Front psychiatry. 2026;17:1761499.

[16] Gao H, Ren J, Tang F, Wu S, Zou Z, Chen B, et al. Efficacy of Music Therapy on Hypertensive Patients: A Systematic Review and Meta-Analysis. J Evid Based Med [Internet]. 2026;19(1):e70108. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/jebm.70108

[17] Jespersen K V, Pando-Naude V, Koenig J, Jennum P, Vuust P. Listening to music for insomnia in adults. Cochrane database Syst Rev. 2022 Aug;8(8):CD010459.

[18] Aji PT, Rizkasari E. Sustainable Digital Health Education for Hypertension Self- Management in Rural Communities. J Lingkung dan Inov Berkelanjutan [Internet]. 2026;1(1):8–19. Available from: https://journal.pslhmb-ummat.id/index.php/jlib/index%0ASustainable

[19] Prima Trisna Aji, Marta Tania Gabriel Ching Cing ER. Determinan Kepatuhan Self-Management Pada Pasien Hipertensi di Pelayanan Kesehatan Primer. J Nurs Sci Res. 2026;3(1):1–11.

[20] Aji PT, Rizkasari E. Efektivitas Terapi Musik Berbasis Playlist Sheila On 7 terhadap Tingkat Kecemasan pada Pasien Pasca Percutaneous Coronary Intervention. J Lentera Hidup Rumah J Ilm Multidisiplin [Internet]. 2026;6(1):1–15. Available from: https://journal.lenteramulia.org/index.php/rumi/article/view/287

[21] Pujiyanto PTAER. Pengaruh Terapi Guided Imagery terhadap Perubahan Tekanan Darah pada Penderita Hipertensi di Wilayah Puskesmas Jayengan Surakarta. Aisyiyah Surakarta J Nurs. 2021;2(1):1–6.

[22] Hudiyawati D, Aji PT, Syafriati A, Jumaiyah W. Pengaruh Murotal Al-Qur ' an Terhadap Kecemasan Pada Pasien Pre- Percutaneous Coronary Intervention. J Ber Ilmu Keperawatan. 2022;15(1):8–14.