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Original Research

Effect of Saluang Music on Systolic Blood Pressure And Fatigue in Patients with Chronic Kidney Disease Undergoing Hemodialysis

Lenni Sastra*[1], Zulham Efendi[2], Cintya Angeline Praweshti[3]
1-3 Faculty of Health and Science Mercubaktijaya University, Padang, West Sumatra, Indonesia

A R T I C L E I N F O

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A B S T R A C T

Chronic kidney disease (CKD) is a progressive and irreversible condition that, in advanced stages, requires kidney replacement therapy such as hemodialysis. Patients undergoing hemodialysis frequently experience complications, including hypertension, hypotension, and fatigue. Non-pharmacological interventions, such as traditional instrumental music therapy, may help alleviate these symptoms. This study aimed to examine the effect of saluang, a traditional Indonesian instrumental music, on systolic blood pressure and fatigue in patients with chronic kidney disease undergoing hemodialysis. This pre-experimental study employed a one-group pre-test–post-test design involving 20 participants selected through purposive sampling. The intervention consisted of listening to saluang music for 30 minutes per session over five sessions during hemodialysis. Data were analyzed using repeated-measures ANOVA. The mean fatigue score decreased from 41.50 to 37.45 ($p < 0.001$), and the mean systolic blood pressure decreased from 177.50 mmHg to 172.55 mmHg ($p < 0.001$). These findings indicate that repeated exposure to saluang music was associated with reductions in fatigue scores and systolic blood pressure among patients undergoing hemodialysis. However, further studies with larger sample sizes and control groups are needed to confirm these findings. Saluang music may be considered a complementary non-pharmacological intervention in nursing care for patients undergoing hemodialysis.

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* Corresponding author.
E-mail addresses: lenni_sastra@yahoo.com

INTRODUCTION

Chronic kidney disease (CKD) is characterized by a gradual and progressive decline in kidney function, resulting in the kidneys' inability to regulate fluid, electrolyte, and toxin levels in the body (Wandile, 2023). This condition often

develops insidiously over several years and frequently remains asymptomatic in its early stages (Black & Hawks, 2022). In advanced stages, CKD requires kidney replacement therapy, such as hemodialysis (Bello et al., 2022).

Globally, CKD represents a major public health burden due to its associated complications and adverse effects on quality of life. In Indonesia, the prevalence of CKD among individuals aged ≥15 years increased from 0.2% in 2013 to 0.38% in 2018, including in West Sumatra (Badan Penelitian dan Pengembangan Kesehatan, 2018). Although a slight decline was reported in 2023, this may reflect differences in survey methodology rather than a true reduction in disease burden (Badan Kebijakan Pembangunan Kesehatan, 2023). line with this trend, the proportion of patients undergoing hemodialysis increased from 19.3% (2,849 individuals) in 2018 to 21.1% in 2023 (Badan Kebijakan Pembangunan Kesehatan, 2023; Badan Penelitian dan Pengembangan Kesehatan, 2018).

Hemodialysis, while life-sustaining, is associated with various complications, including hypertension, hypotension, and fatigue (Black & Hawks, 2022). These symptoms are commonly reported among patients undergoing hemodialysis and may negatively affect functional status, self-care ability, and quality of life (Wahyudi et al., 2022). Previous studies have shown that fatigue is highly prevalent among patients receiving hemodialysis and is associated with blood pressure fluctuations and adverse clinical outcomes (Debnath et al., 2021; Musniati et al., 2020).

Non-pharmacological interventions, such as music therapy, have been widely explored to manage symptoms in clinical settings. Music therapy may promote relaxation, reduce stress, and modulate physiological responses through mechanisms including autonomic nervous system regulation, distraction, and emotional engagement (Li et al., 2021; Rachmawati et al., 2021). Instrumental music, in particular, has been shown to facilitate relaxation and improve psychological well-being (Witte et al., 2022).

Traditional instrumental music offers additional cultural relevance that may enhance its therapeutic effects. Several studies conducted in Indonesia have demonstrated that traditional music can reduce pain, anxiety, and blood pressure in various patient populations (Damayanti et al., 2019; Handayani et al., 2018; Nurhidayati et al., 2020; Rahman et al., 2018; Supriadi et al., 2015; Wahyuningsih et al., 2020; Wulan & Apriliyasari, 2020). However, these findings are generally not specific to particular traditional instruments or clinical settings.

Saluang, a traditional Minangkabau bamboo flute from West Sumatra, produces distinctive melodic patterns that are often associated with relaxation and emotional expression (Ediwar et al., 2018). Its slow tempo and repetitive tonal structure may contribute to physiological calming effects. Previous studies have reported that saluang music can reduce stress among patients with breast cancer and type 2 diabetes mellitus (Sastra & Reni, 2022). However, despite the growing evidence supporting traditional music therapy, no studies have specifically examined the effect of saluang music on systolic blood pressure and fatigue among patients with CKD undergoing hemodialysis. Therefore, this study aimed to examine the effect of saluang music on systolic blood pressure and fatigue in patients with CKD undergoing hemodialysis.

METHOD

A one-group pre-test–post-test design was used to evaluate the effect of saluang music on systolic blood pressure and fatigue among patients with chronic kidney disease (CKD) undergoing hemodialysis. The study was conducted in the hemodialysis unit of a public hospital in West Sumatra, Indonesia, from May 26 to June 14, 2023.

A total of 22 patients were recruited using purposive sampling to ensure that participants met specific clinical and procedural characteristics relevant to the intervention. The inclusion criteria were: undergoing hemodialysis twice weekly, aged 40–50 years, having no prior exposure to music therapy, and being cognitively able to participate. Patients with moderate-to-severe hearing or cognitive impairment, those who did not enjoy listening to music, and those with unstable clinical conditions were excluded. Of the 22 patients initially recruited, 2 were excluded: 1 declined to participate, and 1 had an unstable clinical condition. Therefore, 20 participants were included in the final analysis.

The intervention consisted of listening to standardized pre-recorded saluang music through headphones for 30 minutes per session during hemodialysis. All participants received the same set of music tracks with similar tempos and durations to ensure consistency. The intervention was administered five times over approximately 2–3 weeks in accordance with the participants' regular hemodialysis schedule (twice weekly). The music was played during the first half of each dialysis session, and participants were encouraged to remain in a comfortable position throughout the intervention. The volume was adjusted according to individual comfort levels.

Fatigue was assessed using the Fatigue Severity Scale (FSS), a 9-item instrument with scores ranging from 1 to 7, where higher scores indicate greater fatigue. The Indonesian version of the FSS has been reported to be a valid and reliable instrument with good internal consistency (Cronbach's alpha = 0.88) (Rifa'i et al., 2018). Systolic blood pressure was measured by trained nursing staff using a calibrated automated sphygmomanometer while patients were in the supine position. Baseline measurements were obtained prior to the first intervention session, and follow-up measurements were collected after each intervention session. The final post-test measurement was obtained after the fifth intervention session.

All participants provided written informed consent and were informed of their right to withdraw from the study at any time without penalty. Ethical approval was obtained from the Hospital Research Ethics Committee (IRB No. LB.02.02/5.7/277/2023). Data were analyzed using repeated-measures ANOVA in SPSS.

RESULT

Table 1. Characteristics of Patients with Chronic Kidney Disease Undergoing Hemodialysis (n=20)

Characteristics	Mean (SD)	Frequency (f)	%
Age	**45.75 (3.55)**		
Gender			
Male		**9**	**45.00**
Female		**11**	**55.00**

According to Table 1, the mean age of the participants was 45.75 years (SD = 3.55), and the majority were female (55%).

Table 2. Results of Repeated-Measures ANOVA for Systolic Blood Pressure (n=20)

Variables	Mean (SD)	p-value
Baseline systolic blood pressure (pre-test) (n = 20)	177.50 (4.30)	<0.001
After intervention session 1 (n = 20)	177.10 (5.23)	
After intervention session 2 (n = 20)	177.10 (5.23)	
After intervention session 3 (n = 20)	174.90 (4.67)	
After intervention session 4 (n = 20)	174.95 (3.94)	
After intervention session 5 (post-test) (n = 20)	172.55 (5.06)	

Table 2 shows that the mean systolic blood pressure (SBP) at baseline (pre-test), measured immediately before the first intervention session, was 177.50 mmHg (SD = 4.30). Following intervention session 1, the mean SBP was 177.10 mmHg (SD = 5.23), indicating only a slight change from baseline. SBP gradually decreased across subsequent intervention sessions, with minor fluctuations during the early sessions and a more noticeable decline after the third session. After intervention session 5 (post-test), the mean SBP reached 172.55 mmHg (SD = 5.06). Repeated-measures ANOVA demonstrated a statistically significant difference across the measurement points ($p < 0.001$). Overall, the mean SBP at the final measurement was approximately 5 mmHg lower than at baseline.

Table 3. Results of Repeated-Measures ANOVA for Fatigue Scores (n=20)

Variables	Mean (SD)	p-value
Baseline fatigue score (pre-test) (n = 20)	41.50 (4.69)	<0.001
After intervention session 1 (n = 20)	41.50 (4.69)	
After intervention session 2 (n = 20)	41.75 (4.39)	
After intervention session 3 (n = 20)	41.30 (4.34)	
After intervention session 4 (n = 20)	40.45 (4.22)	
After intervention session 5 (post-test) (n = 20)	37.45 (3.86)	

Table 3 shows that the mean fatigue score at baseline (pre-test), measured immediately before the first intervention session, was 41.50 (SD = 4.69). The fatigue score remained relatively stable during the first two intervention sessions, with mean scores of 41.50 (SD = 4.69) and 41.75 (SD = 4.39), respectively. A gradual decline was observed from intervention session 3 onward, reaching 40.45 (SD = 4.22) after intervention session 4 and 37.45 (SD = 3.86) after intervention session 5 (post-test). Repeated-measures ANOVA revealed a statistically significant difference across the measurement points ($p < 0.001$). Compared with baseline, the mean fatigue score at the final measurement was approximately 4 points lower.

DISCUSSION

The findings of this study suggest that systolic blood pressure and fatigue scores were lower following repeated exposure to saluang music among patients undergoing hemodialysis. These findings are consistent with previous studies demonstrating that music therapy can reduce fatigue and improve physiological parameters in patients undergoing hemodialysis (Wayunah et al., 2023). Furthermore, previous studies have shown that music therapy may help regulate blood pressure, alleviate anxiety, and improve overall well-being among individuals receiving hemodialysis (Hiremath et al., 2022; Karadağ & Karadakovan, 2015; Kutlu & Eren, 2014; Wu et al., 2021; Yangöz et al., 2025).

In the present study, the reduction in systolic blood pressure was approximately 5 mmHg. Although modest, this decrease may still be clinically meaningful, as even small reductions in systolic blood pressure have been associated with a lower risk of cardiovascular events (Ettehad et al., 2016; Whelton et al., 2018). Furthermore, the gradual decline observed across repeated sessions suggests a possible cumulative effect of the intervention. The reduction in fatigue observed in this study may also be clinically meaningful, considering that fatigue is a highly prevalent and debilitating symptom among patients undergoing hemodialysis. Persistent fatigue has been associated with impaired physical functioning, reduced treatment adherence, and poorer quality of life (Bossola et al., 2023). The progressive improvement in fatigue scores across sessions suggests that repeated exposure to music may provide sustained benefits. These findings are supported by previous studies indicating that music therapy can reduce fatigue and stress by promoting relaxation and enhancing psychological well-being (Bradt et al., 2021; Witte et al., 2022).

The underlying mechanisms of these effects may involve modulation of the autonomic nervous system (ANS) and neuroendocrine responses. Music has been reported to reduce activation of the hypothalamic–pituitary–adrenal axis and enhance parasympathetic activity, thereby promoting relaxation and physiological stability (Ding et al., 2025). In addition, music therapy has been shown to increase heart rate variability (HRV), an indicator of parasympathetic dominance, while reducing sympathetic nervous system activity. These physiological changes contribute to improved cardiovascular regulation and may help explain the reduction in systolic blood pressure observed in this study (Ding et al., 2025; Zhang et al., 2024).

The rhythmic and slow-tempo characteristics of saluang music may also facilitate entrainment processes, whereby physiological parameters such as heart rate, respiratory rate, and blood pressure synchronize with auditory stimuli. This synchronization may enhance relaxation responses and support emotional regulation, ultimately contributing to reduced stress and improved well-being (Saskovets et al., 2025). Beyond its physiological effects, music may influence psychological processes by regulating emotional responses, improving mood, and reducing anxiety through the activation of reward pathways (De Witte et al., 2025). This cognitive and emotional modulation may function as a distraction mechanism, redirecting patients' attention away from discomfort during hemodialysis and thereby reducing perceived fatigue.

Despite these promising findings, several factors should be considered when interpreting the results. Patients undergoing hemodialysis often receive antihypertensive medications and other treatments that may influence blood pressure and fatigue levels. Additionally, the use of headphones may have contributed to noise reduction and relaxation independently of the music itself. These potential confounding factors were not controlled in this study.

This study has several limitations, including a small sample size ($n = 20$), the absence of a control group, and a relatively short intervention period, which limit the ability to establish causality and generalize the findings. The one-group pre-test–post-test design also makes it difficult to distinguish the effects of the intervention from natural changes that may occur during hemodialysis sessions.

Nevertheless, these findings have important implications for nursing practice. Saluang music therapy may serve as a simple, low-cost, and culturally relevant complementary intervention to help manage fatigue and blood pressure during hemodialysis. Nurses may integrate this intervention into routine care by providing standardized music sessions while respecting patients' comfort and preferences. Future research should involve larger sample sizes, randomized controlled trials, and longer intervention periods to confirm these findings. Additionally, studies comparing different types of music or isolating the effects of auditory stimulation (e.g., music versus noise reduction) are recommended to further clarify the specific contribution of music therapy.

CONCLUSION

This study examined the effect of saluang, a traditional Indonesian instrumental music, on systolic blood pressure and fatigue among patients with chronic kidney disease (CKD) undergoing hemodialysis. The findings demonstrated statistically significant reductions in systolic blood pressure and fatigue following the intervention. However, given the small sample size and the absence of a control group, these findings should be interpreted with caution

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and considered preliminary.

Despite these limitations, saluang music therapy may represent a feasible complementary intervention in nursing practice. It is relatively low-cost, easy to implement using headphones, and does not require extensive training, making it suitable for integration into routine care in hemodialysis units. Future studies involving larger samples and randomized controlled trials are needed to confirm the effectiveness of this intervention. Further research is also recommended to explore the use of traditional instrumental music across different patient populations and clinical settings and to compare its effects with those of other non-pharmacological interventions.

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REFERENCES

Badan Kebijakan Pembangunan Kesehatan. (2023). *Survei Kesehatan Indonesia (SKI)* (pp. 1–925). Kementrian Kesehatan Indonesia. https://www.badankebijakan.kemkes.go.id/hasil-ski-2023/

Badan Penelitian dan Pengembangan Kesehatan. (2018). *Hasil utama RISKESDAS 2018* (pp. 1–100). https://layanandata.kemkes.go.id/katalog-data/riskesdas/ketersediaan-data/riskesdas-2018

Bello, A. K., Okpechi, I. G., Osman, M. A., Cho, Y., Htay, H., Jha, V., Wainstein, M., & Johnson, D. W. (2022). Epidemiology of haemodialysis outcomes. *Nature Reviews Nephrology*, *18*(6), 378–395. https://doi.org/10.1038/s41581-022-00542-7

Black, J. M., & Hawks, J. H. (2022). *KMB: Dasar-dasar keperawatan medikal bedah*. Elsevier (Singapore) Pte Limited. https://books.google.co.id/books?id=7UWeEAAAQBAJ

Bossola, M., Hedayati, S. S., Brys, A. D. H., & Gregg, L. P. (2023). Fatigue in Patients Receiving Maintenance Hemodialysis: A Review. *American Journal of Kidney Diseases*, *82*(4), 464–480. https://doi.org/10.1053/j.ajkd.2023.02.008

Bradt, J., Dileo, C., Myers-Coffman, K., & Biondo, J. (2021). Music interventions for improving psychological and physical outcomes in people with cancer. *Cochrane Database of Systematic Reviews*, *2022*(9). https://doi.org/10.1002/14651858.CD006911.pub4

Damayanti, D., Taukhid, M., & Rahayu, Y. A. (2019). Pengaruh mendengarkan instrumental klenengan gending jawa klasikterhadap tekanan darah pasien hipertensi. *Jurnal Ilmu Kesehatan*, *10*(1), 33–44. https://doi.org/10.35966/ilkes.v10i1.107

De Witte, M., Aalbers, S., Vink, A., Friederichs, S., Knapen, A., Pelgrim, T., Lampit, A., Baker, F. A., & Van Hooren, S. (2025). Music therapy for the treatment of anxiety: A systematic review with multilevel meta-analyses. *eClinicalMedicine*, *84*, 103293. https://doi.org/10.1016/j.eclinm.2025.103293

Debnath, S., Rueda, R., Bansal, S., Kasinath, B. S., Sharma, K., & Lorenzo, C. (2021). Fatigue characteristics on dialysis and non-dialysis days in patients with chronic kidney failure on maintenance hemodialysis. *BMC Nephrology*, *22*(1), 112. https://doi.org/10.1186/s12882-021-02314-0

Ding, H., Du, B., Wei, Y., Yuan, C., Fang, Y., Xiao, Y., Gao, Y., Liu, N., & Chen, W. (2025). Effects of Music Therapy on Perioperative Anxiety and Postoperative Sleep Quality in Patients Undergoing Surgery for Lumbar Disc Herniation. *Noise and Health*, *27*(128), 631–640. https://doi.org/10.4103/nah.nah_105_25

Ediwar, E., Minawati, R., Yulika, F., & Hanefi, H. (2018). *Musik Tradisional Minangkabau*. GRE PUBLISHING.

Ettehad, D., Emdin, C. A., Kiran, A., Anderson, S. G., Callender, T., Emberson, J., Chalmers, J., Rodgers, A., & Rahimi, K. (2016). Blood pressure lowering for prevention of cardiovascular disease and death: A systematic review and meta-analysis. *The Lancet*, *387*(10022), 957–967. https://doi.org/10.1016/S0140-6736(15)01225-8

Handayani, K. P., Johan, A., & Ropyanto, C. B. (2018). The influence of sundanese zither (kacapi) music therapy on anxiety levels in pre-cardiac catheterization patients. *Belitung Nursing Journal*, *4*(2), 256–262. https://doi.org/10.33546/bnj.125

Hiremath, D. P., Nair, L. S., Mohite, D. V. R., Salunkhe, D. J., & Naregal, D. P. (2022). Effect of music therapy on blood pressure among hemodialysis patients at tertiary care hospital. *Journal of Pharmaceutical Negative Results*, *13*(7), 5918–5923. https://doi.org/10.47750/pnr.2022.13.S07.718

Karadağ, E., & Karadakovan, A. (2015). The effect of music on the sleep quality and vital signs of the chronic renal failure patients who are getting hemodialysis treatment. *Turkiye Klinikleri Journal of Nursing*, *7*(2), 79–89. https://doi.org/10.5336/nurses.2013-34224

Kutlu, A. K., & Eren, A. G. (2014). Effects of music on complications during hemodialysis for chronic renal failure patients. *Hemodialysis International*, *18*(4), 777–784. https://doi.org/10.1111/hdi.12161

Li, K., Weng, L., & Wang, X. (2021). The state of music therapy studies in the past 20 years: A bibliometric analysis. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.697726

Musniati, M., Muhsinin, S. Z., & Puspitasari, P. (2020). Gambaran fatigue pada pasien hemodialisa di RSUP NTB. *Jurnal Keperawatan Dan Kebidanan*, *12*(2), 7–11.

Nurhidayati, T., Pambudi, D. A., Rahayu, D. A., Elengoe, A., & Ramuni, K. (2020). The effectiveness of gamelan therapy on depression levels in chronic kidney failure patients. *Enfermería Clínica*, *30*, 69–72. https://doi.org/10.1016/j.enfcli.2019.11.023

Rachmawati, F. E., Satiadarma, M. P., & Chris, A. (2021). Penggunaan terapi musik untuk menurunkan kelelahan akibat pengobatan pada pasien kanker serviks: Studi kasus. *Jurnal Muara Ilmu Sosial, Humaniora, Dan Seni*, *5*(2), 311–316. https://doi.org/10.24912/jmishumsen.v5i2.9857.2021

Rahman, A., Santoso, B., & Sudirman, S. (2018). Effect of hariring kabayan instrumental music therapy on pain and anxiety level in patients with acute myocardial infarction. *Belitung Nursing Journal*, *4*(1), 89–97. https://doi.org/10.33546/bnj.340

Rifa'i, A., Kalim, H., Handono, K., & Wahono, C. S. (2018). Validity and reliability fatigue severity scale in patients with Systemic Lupus Erythematosus (SLE) in Indonesia. *Indonesian Journal of Rheumatology*, *8*(1). https://doi.org/10.37275/ijr.v8i1.5

Saskovets, M., Saponkova, I., & Liang, Z. (2025). Effects of Sound Interventions on the Mental Stress Response in Adults: Scoping Review. *JMIR Mental Health*, *12*, e69120. https://doi.org/10.2196/69120

Sastra, L., & Reni, I. (2022). The Effect of Indonesian Traditional Music on Stress in Type II Diabetes Mellitus Patients. *KnE Life Sciences*, *7*(2). https://doi.org/10.18502/kls.v7i2.10371

Supriadi, D., Hutabarat, E., & Monica, V. (2015). Pengaruh terapi musik tradisional kecapi suling sunda terhadap tekanan darah pada lansia dengan hipertensi. *Jurnal Skolastik Keperawatan*, *1*(2), 29–35. https://doi.org/10.35974/jsk.v1i2.80

Wahyudi, J. T., Maharani, I., & Tiranda, Y. (2022). Hubungan antara tingkat fatique dengan self care pada pasien penyakit ginjal kronis (PGK) yang menjalani hemodialisa di RS Pusri Palembang. *Masker Medika*, *10*(2), 756–761. https://doi.org/10.52523/maskermedika.v10i2.501

Wahyuningsih, T., Warongan, A. W., & Rayansari, F. (2020). Pengaruh Terapi Musik Degung Terhadap Tingkat Nyeri Pada Pasien Post Orif (Open Reduction And Internal Fixation) Fraktur Extremitas Bawah Di RSUD Kabupaten Tangerang. *Journal of Islamic Nursing*, *5*(2), 121. https://doi.org/10.24252/join.v5i2.17664

Wandile, P. M. (2023). Complexity and management of chronic kidney disease. *Open Journal of Nephrology*, *13*(03), 280–291. https://doi.org/10.4236/ojneph.2023.133027

Wayunah, W., Wiwin Nur Aeni, Aulia Faturrohman, & Muhammad Saefulloh. (2023). Interdialytic exercise reduces fatigue in chronic kidney failure patients: Systematic lliterature review. *HealthCare Nursing Journal*, *5*(2), 822–830. https://doi.org/10.35568/healthcare.v5i2.3768

Whelton, P. K., Carey, R. M., Aronow, W. S., Casey, D. E., Collins, K. J., Dennison Himmelfarb, C., DePalma, S. M., Gidding, S., Jamerson, K. A., Jones, D. W., MacLaughlin, E. J., Muntner, P., Ovbiagele, B., Smith, S. C., Spencer, C. C., Stafford, R. S., Taler, S. J., Thomas, R. J., Williams, K. A., … Wright, J. T. (2018). Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension*, *71*(6). https://doi.org/10.1161/HYP.0000000000000065

Witte, M. de, Pinho ,Ana da Silva, Stams ,Geert-Jan, Moonen ,Xavier, Bos ,Arjan E.R., & and van Hooren, S. (2022). Music therapy for stress reduction: A systematic review and meta-analysis. *Health Psychology Review*, *16*(1), 134–159. https://doi.org/10.1080/17437199.2020.1846580

Wu, X.-L., Ji, B., Yao, S.-D., Wang, L.-L., & Jiang, Z.-Y. (2021). Effect of music intervention during hemodialysis: A comprehensive meta-analysis. *European Review for Medical and Pharmacological Sciences*, *25*(10), 3822–3834. https://doi.org/10.26355/eurrev_202105_25950

Wulan, E. S., & Apriliyasari, R. W. (2020). Perubahan Intensitas Nyeri Melalui Pemberian Terapi Musik Gamelan Pada Pasien Di Intensive Care Unit (ICU) RSUD dr. Loekmonohadi Kudus. *Jurnal Keperawatan dan Kesehatan Masyarakat Cendekia Utama*, *9*(1), 1–6. https://doi.org/10.31596/jcu.v9i1.509

Yangöz, Ş. T., Turan Kavradim, S., & Özer, Z. (2025). Spiritual interventions on physical and psychological outcomes in adults receiving haemodialysis: A systematic review and meta-analysis of randomized controlled studies. *Applied Nursing Research*, *83*, 151918. https://doi.org/10.1016/j.apnr.2025.151918

Zhang, L., Zou, L., & Zhou, L. (2024). Effectiveness of psychoeducational interventions on psychological distress and health-related quality of life among patients with maintenance hemodialysis: A systematic review and meta-analysis. *Renal Failure*, *46*(1), 2331613. https://doi.org/10.1080/0886022X.2024.233161

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