

Effectiveness of Selected Nursing Interventions for Reducing Psychological and Physiological Symptoms Among Perimenopausal Women in a Rural Community of Coimbatore, India

Dr. Prof. Rukmani ¹, K. Jothilakshmi ², Prof. N. Geetharani ³, Prof. I.Revathi ⁴,
Dr.P. Padmavathi ⁵, Dr. Prof.M. Hatlin Sugi ⁶,

¹M. Sc(N), Ph.D.(N) Professor, Department of Obstetrics and Gynecological Nursing, R.V.S. College of Nursing, Namakkal, Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

²M. Sc(N), Associate Professor, Department of Obstetrics and Gynecological Nursing, K.S. Rangasamy College of Nursing, Affiliated to Chettinad Academy of Research and Education, Chennai.

³M. Sc(N), Professor, Department of Obstetrics and Gynecological Nursing, Dhanvantri College of Nursing, Namakkal, Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai

⁴M. Sc(N), Ph.D.(N), Professor, Department of Obstetrics and Gynecological Nursing, Dhanvantri College of Nursing, Namakkal, Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

⁵M. Sc(N), Ph.D.(N), Principal, Department of Obstetrics and Gynecological Nursing, PPG College of Nursing, Coimbatore, Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

⁶M. Sc(N), Ph.D.(N), Professor, Department of Obstetrics and Gynecological Nursing, PPG college of nursing, Coimbatore, Affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

Email id:hatlinsugi@gmail.com,srimathidharshana@gmail.com

Abstract

Background: Perimenopause is associated with psychological and physiological symptoms that may adversely affect daily functioning and quality of life. Women in rural communities may have limited awareness and access to supportive care. This study evaluated the effectiveness of a structured, non-pharmacological nursing intervention package comprising breathing exercises, aerobic exercise, and music therapy.

Methods: A quantitative quasi-experimental pretest–posttest design with an experimental and control group was conducted in Elachipalayam village, Kaniyur Panchayat, Coimbatore district. Sixty perimenopausal women aged 40–45 years with moderate symptoms were selected by purposive sampling and allocated to an experimental group (n=30) and control group (n=30). Symptoms were assessed using a structured interview schedule and a modified 22-item Greene Climacteric Rating Scale. The intervention consisted of 10 minutes of breathing exercise, 10 minutes of aerobic exercise, and 10 minutes of music therapy daily for 30 days. Paired and independent t-tests, Karl Pearson correlation, and chi-square tests were used.

Results: Mean psychological symptom scores in the experimental group decreased from 18.10±3.28 at baseline to 8.70±2.35 after intervention (paired t=13.912, df=29, p<0.001). The control group changed from 18.83±4.16 to 18.23±3.15 (t=1.439, df=29, p=0.161). Post-intervention psychological scores differed significantly between groups (t=13.290, df=58, p<0.001). Mean physiological symptom scores in the experimental group decreased from 22.30±2.59 to 11.70±2.56 (paired t=19.727, df=29, p<0.001), whereas the control group changed from 23.13±5.12 to 23.47±4.62. The post-intervention between-group difference was significant (t=12.196, df=58, p<0.001). Psychological and physiological symptoms were positively correlated at baseline (r=0.512, p<0.001), after intervention in the experimental group (r=0.477, p=0.008), and in the control group (r=0.715, p<0.001).

Conclusion: The selected 30-day nursing intervention package was associated with substantial reductions in psychological and physiological symptom scores among the participating rural perimenopausal women. Larger, randomized, multicenter studies with longer follow-up are warranted.

Keywords: perimenopause; menopausal symptoms; nursing intervention; breathing exercise; aerobic exercise; music therapy; rural women; psychological symptoms; physiological symptoms

How to cite this article: Prof. Rukmani 1 K. Jothilakshmi 2 Prof. N. Geetharani 3 Prof. I.Revathi 4. Effectiveness of Selected Nursing Interventions for Reducing Psychological and Physiological Symptoms Among Perimenopausal Women in a Rural Community of Coimbatore, India. Int J Drug Deliv Technol. 2026;16(86s):244-248. DOI: 10.25258/ijddt.16.86s.30.

1. Introduction

Perimenopause, or the menopausal transition, is accompanied by hormonal fluctuations and a range of physical and emotional symptoms. Common complaints include hot flushes, night sweats, sleep disturbance, fatigue, headache, joint and muscle pain, irritability, anxiety, mood changes, and difficulty concentrating. The burden of symptoms may be particularly important in community settings where awareness and access to health services are limited.

The thesis underpinning this manuscript identified a need for practical, low-cost approaches that can be delivered by nurses in rural communities. The study specifically focused on a combined package of breathing exercise, aerobic exercise, and music therapy rather than a single intervention.

Prior studies cited in the thesis reported beneficial effects of exercise, relaxation/breathing approaches, and music-based interventions on menopausal symptoms. Recent reviews cited in the thesis also suggest that physical

activity can improve both symptom burden and quality of life. The present study extends this literature by examining a combined nursing intervention package among perimenopausal women in a rural community of Coimbatore.

The study was guided by Nola J. Pender's Health Promotion Model, which emphasizes individual characteristics, prior behaviour, perceived benefits and barriers, self-efficacy, interpersonal influences, and commitment to health-promoting actions.

2. Objectives

- To identify psychological and physiological symptoms among perimenopausal women in the selected rural community.
- To assess and compare psychological and physiological symptoms between experimental and control groups before and after the intervention.
- To determine the correlation between psychological and physiological symptoms.
- To examine the association between selected demographic variables and psychological and physiological symptoms.

3. Methods

3.1 Study design and setting

A quantitative quasi-experimental pretest–posttest design was used. The study was conducted in Elachipalayam village, Kaniyur Panchayat, Karumathampatti, Coimbatore district, Tamil Nadu, India. The thesis reports that 263 perimenopausal women resided in the selected village and 83 met the stated screening and delimitation criteria.

3.2 Participants and sampling

Sixty women aged 40–45 years who had moderate menopausal symptoms and were willing to participate were selected using non-probability purposive sampling. Thirty participants formed the experimental group and 30 formed the control group. Exclusion criteria included surgical menopause (hysterectomy/bilateral oophorectomy), current hormone replacement therapy, severe mental health disorders requiring medication, serious medical conditions limiting physical activity, and participation in a current structured exercise programme.

3.3 Intervention

The intervention was delivered once daily for 30 consecutive days for a total of 30 minutes per session. Each session comprised 10 minutes of diaphragmatic/deep-breathing exercise, 10 minutes of moderate simple aerobic activity (including walking in place, stretching, arm movements and gentle body movements), and 10 minutes of guided music therapy using soft, soothing music. The investigator demonstrated and guided the activities. The control group received routine care during the study and was offered the intervention after completion.

3.4 Outcome measurement

Data were collected using a structured interview schedule and a modified Greene Climacteric Rating Scale. The modified tool contained 22 items: 10 psychological and 12 physiological items. Each item was scored from 0 (not at

all) to 3 (extremely), with higher scores indicating greater symptom severity. The thesis reports test–retest reliability of $r=0.86$ and content validation by experts.

3.5 Data collection and ethics

Pre-intervention assessments were completed in both groups, followed by the 30-day intervention in the experimental group and routine care in the control group. Post-intervention assessments were then performed. The thesis states that institutional ethics clearance and permission from the local authorities were obtained, oral informed consent was obtained in Tamil, participation was voluntary, confidentiality and anonymity were maintained, and participants could withdraw at any time.

3.6 Statistical analysis

Data were analysed using SPSS. Frequency, percentage, mean and standard deviation were used for descriptive analysis. Paired t-tests were used for within-group pre–post comparisons, independent (unpaired) t-tests for between-group comparisons, Karl Pearson's correlation coefficient for relationships between psychological and physiological symptom scores, and chi-square tests for associations with selected demographic variables. The thesis used $p<0.05$ and $p<0.01$ as significance thresholds.

4. Results

The two groups were comparable at baseline for the principal symptom outcomes. The baseline psychological score was 18.10 ± 3.28 in the experimental group and 18.83 ± 4.16 in the control group ($t=0.758$, $df=58$, $p=0.452$). Baseline physiological scores were 22.30 ± 2.59 and 23.13 ± 5.12 , respectively ($t=0.796$, $df=58$, $p=0.429$).

Table 1. Psychological symptom scores before and after intervention

Group	n	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean change	Paired t	p
Experimental	30	18.10 ± 3.28	8.70 ± 2.35	9.40	13.912	<0.001
Control	30	18.83 ± 4.16	18.23 ± 3.15	0.60	1.439	0.161

In the experimental group, psychological symptom scores decreased by 9.40 points and the within-group change was statistically significant. After intervention, the experimental group had a substantially lower mean psychological score than the control group (8.70 ± 2.35 vs 18.23 ± 3.15 ; independent $t=13.290$, $df=58$, $p<0.001$).

Table 2. Physiological symptom scores before and after intervention

Group	n	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean change	Paired t	p
Experimental	30	22.30 ± 2.59	11.70 ± 2.56	10.60	19.727	<0.001

Effectiveness of Selected Nursing Interventions for Reducing Psychological and Physiological Symptoms Among Perimenopausal Women in a Rural Community of Coimbatore, India

Control	30	23.13 ±5.12	23.47 ±4.62	-0.34	Not significant	0.429*
---------	----	----------------	----------------	-------	-----------------	--------

*The thesis reports the baseline between-group comparison as $t=0.796$, $p=0.429$. The within-control-group physiological test statistic was not reproduced in the available thesis summary; therefore, it is not invented here.

After intervention, physiological symptom scores were significantly lower in the experimental group than in the control group (11.70 ± 2.56 vs 23.47 ± 4.62 ; independent $t=12.196$, $df=58$, $p<0.001$).

Table 3. Correlation between psychological and physiological symptom scores

Observation	Psychological Mean±SD	Physiological Mean±SD	Pearson r	p
Before intervention (n=60)	18.47±3.73	22.72±4.04	0.512	<0.001
After intervention—Experimental (n=30)	8.70±2.35	11.70±2.56	0.477	0.008
After intervention—Control (n=30)	18.23±3.15	23.47±4.62	0.715	<0.001

Psychological and physiological symptoms showed significant positive correlations at baseline and at post-intervention assessment in both groups, indicating that greater symptom burden in one domain tended to accompany greater burden in the other.

Table 4. Physiological symptoms showing significant item-level change in the experimental group

Symptom	Pre Mean	Post Mean	Paired t	p
Dizziness	1.20	0.50	3.881	0.001
Pressure/tightness	1.70	0.63	7.443	<0.001
Numbness/tingling	1.33	0.57	4.892	<0.001
Headache	2.50	1.33	9.866	<0.001
Muscle/joint pain	2.50	1.20	10.933	<0.001

Breathing difficulties	1.27	0.77	2.921	0.007
Hot flushes	2.57	1.47	7.940	<0.001
Night sweating	2.53	1.37	9.143	<0.001
Loss of sexual interest	2.33	1.20	7.577	<0.001
Vaginal dryness	2.17	0.77	9.424	<0.001
Loss of sensation in hands/feet	1.13	0.90	1.270	0.214
Bladder incontinence	0.97	1.00	0.150	0.882

At item level, significant reductions were reported for most physiological symptoms. Loss of sensation in the hands/feet and bladder incontinence did not show statistically significant improvement.

4.1 Associations with demographic variables

The thesis reports no statistically significant association between selected demographic variables and psychological symptoms before intervention. For physiological symptoms, significant associations were found with educational status ($\chi^2=18.519$, $p<0.001$), monthly income ($\chi^2=6.275$, $p=0.043$), and menstrual regularity ($\chi^2=8.323$, $p=0.016$). Other reported variables, including BMI, age at menarche and menstrual bleeding pattern, were not significantly associated.

5. Discussion

The principal finding was a marked reduction in psychological symptoms following the combined nursing intervention. The experimental-group mean decreased from 18.10 to 8.70, while the control group showed only a small, non-significant change. The between-group post-test difference was also highly significant. This pattern supports the thesis interpretation that a short, structured package integrating breathing, aerobic activity and music therapy may be useful for symptom management in a rural community.

The physiological findings showed a similar pattern. The experimental-group mean decreased from 22.30 to 11.70, whereas the control group remained essentially unchanged. Item-level analysis showed improvements in hot flushes, night sweating, headache, muscle and joint pain, dizziness, breathing difficulties, loss of sexual interest and vaginal dryness. Two outcomes—loss of sensation in the hands/feet and bladder incontinence—did not change significantly, suggesting that the intervention may not address all symptom domains equally.

The findings are consistent with the studies summarized in the thesis. Exercise-based studies cited by the dissertation reported reductions in menopausal symptom burden, while breathing/relaxation interventions were associated with improvements in psychological

symptoms. The thesis also cites music-therapy research reporting reductions in depression and improved emotional wellbeing. A recent systematic review and meta-analysis cited in the thesis found that physical exercise can improve menopausal symptoms and quality of life.

The positive correlations between psychological and physiological symptoms reinforce the value of a holistic nursing approach. The correlation remained significant after intervention in the experimental group, despite the substantial reduction in overall symptom levels. This indicates that symptom domains remain interrelated even when their absolute severity decreases.

The observed associations between physiological symptoms and education, income and menstrual regularity may indicate that symptom experience is influenced by social and reproductive characteristics. However, because the study used purposive sampling and a small sample, these associations should be interpreted cautiously and should not be generalized beyond the study population without confirmation in larger studies.

6. Strengths and Limitations

Strengths

- Use of a structured, multi-component nursing intervention that is feasible in a community setting.
- Assessment of both psychological and physiological symptom domains.
- Use of pre- and post-intervention measurements with a concurrent control group.
- Reported tool reliability of $r=0.86$ and expert content validation.

Limitations

- Small sample size ($n=60$) limits generalizability.
- Non-probability purposive sampling may introduce selection bias.
- Intervention duration was limited to 30 days, preventing assessment of long-term sustainability.
- Outcomes were based on self-reported symptom ratings.
- Lifestyle, diet and environmental factors were not fully controlled.

7. Conclusion

In this rural community-based quasi-experimental study, a 30-day package of breathing exercise, aerobic exercise and music therapy was associated with significant reductions in psychological and physiological symptom scores among perimenopausal women. The intervention is simple and suitable for nurse-led community health programmes. The findings support further evaluation through adequately powered randomized controlled trials with standardized intervention fidelity, longer follow-up, and broader quality-of-life outcomes.

8. Implications for Nursing Practice

Nurses in community and clinical settings may consider incorporating structured breathing, appropriate aerobic activity and relaxation-oriented music sessions into health education and supportive care for women experiencing perimenopausal symptoms, while continuing to refer

women for medical assessment when symptoms are severe, atypical, or require clinical treatment.

9. Declarations for Journal Submission

Ethics approval: The thesis states that institutional ethics clearance was obtained before the study. Insert the formal ethics committee name, approval number and approval date here before submission.

Consent: The thesis states that oral informed consent was obtained from participants after explanation of the study in Tamil.

Funding: Not reported in the thesis. Complete this statement before journal submission.

Conflict of interest: Not reported in the thesis. Complete this statement before journal submission.

Data availability: The thesis does not specify a data-sharing statement. Complete according to the target journal's policy.

Author contributions: Complete using the target journal's required contributor taxonomy.

Trial registration: No registration information was identified in the thesis. If the target journal requires registration for this study design, provide the applicable information or explain why registration was not applicable.

10. References

1. Avis N, Crawford S, Green R. Vasomotor symptoms across the menopause transition. *Journal of Women's Health*. 2015;24(2):123–131.
2. Bhuvaneshwari K, Jawaharbabu M. Effectiveness of paced breathing exercise on menopausal symptoms among women. *International Journal of Nursing Education and Research*. 2018;6(3):259–265.
3. Deshpande S, Kulkarni C, Wadhokar O, Naqvi W, Phansopkar P. Effect of aerobic exercise and music therapy on mental health among menopausal women. *Journal of Medical Pharmaceutical and Allied Sciences*. 2021;10(4):3300–3303.
4. Durairaj A, Venkateshvaran S. Determinants of menopausal symptoms and attitude towards menopause among midlife women: A cross-sectional study in South India. *Cureus*. 2022;14(9):e28718. doi:10.7759/cureus.28718.
5. Freeman EW. Depression during menopausal transition. *Menopause Journal*. 2014;21(6):607–614.
6. Gangadharan S, Venkatesan L. Effect of yoga on somato-vegetative symptoms of menopausal women and its association with demographic variables among yoga and non-yoga groups. *The Nursing Journal of India*. 2021;112(5):225–232.
7. Gupta P, Kaur H. Lifestyle intervention and menopausal symptoms among women. *International Journal of Community Medicine and Public Health*. 2022;9(5):2100–2104.
8. Jamunarani G, Malliga M, Jasmine J, Fabiola, Chandralekha K. A cross-sectional study to assess the intensity of common perimenopausal symptoms among midlife women in selected villages at Cuddalore District, Tamil Nadu. *Journal of Hunan University Natural Sciences*. 2023;60(5):86–94.

9. Kaur S, Walia I. Effectiveness of structured exercise programme on menopausal symptoms. *International Journal of Nursing Education*. 2019;11(2):45–50.
10. Lialy HE, Mohamed MA, AbdAllatif LA, Khalid M, Elhelbawy A. Effects of different physiotherapy modalities on insomnia and depression in perimenopausal, menopausal, and post-menopausal women: A systematic review. *BMC Women's Health*. 2023;23:363. doi:10.1186/s12905-023-02515-9.
11. Muralikrishna GB, Prabhu K, Shanmugapriya, Sankar G. Knowledge, attitudes, and prevalence of menopausal symptoms among perimenopausal and postmenopausal women – A mixed method study from Tamil Nadu. *Journal of Mid-life Health*. 2025;16(2):148–156.
12. Omran AAH, Hassan HE, Ramadan EA, Mohamed SSA. Effect of practicing deep breathing and Kegel exercises on menopausal urinary incontinence at Beni-Suef. *Public Health Open Access*. 2024;8(1):000272. doi:10.23880/phoa-16000272.
13. Patel JD, Sheth M. Effect of aerobic exercise on menopause symptoms in perimenopausal homemakers. *Physiotherapy – The Journal of Indian Association of Physiotherapists*. 2026. doi:10.4103/pjiap.pjiap_241_24.
14. Philip AE, Singh H, Nanjundiah SY, Samudrala PC, Theunissen DW, Robinson J, Banerjee I. Impact of exercise on perimenopausal syndrome: A systematic review of randomized controlled trials. *Cureus*. 2025;17(3):e80862. doi:10.7759/cureus.80862.
15. Sharma P, Mahajan N. Psychological symptoms during menopausal transition among women. *Indian Journal of Public Health Research and Development*. 2020;11(4):120–125.
16. Shobhana M, Chandran JR, Aggarwal N, Sharma S, Jankiram R, Soni A, et al. Incidence of hot flashes among peri- and postmenopausal women in India: A clinico-demographic analysis. *Journal of Mid-life Health*. 2025;16(1):32–37.
17. Sivakumaran P, Prabhu K, Rajendran B, Sankar G. Prevalence of genitourinary syndrome among perimenopausal and postmenopausal women in a tertiary care hospital: A cross-sectional analytical study. *Journal of South Asian Federation of Obstetrics and Gynaecology*. 2025;17(2):163–168.
18. Singh A, Sharma M. Psychological symptoms during menopausal transition among Indian women. *Indian Journal of Community Medicine*. 2019;44(3):215–220.
19. Sivapragasam R, Rajini S, Rajalakshmi S, Priyanga K, Rajesh V, Priyadharshini R. A community-based cross-sectional study about the quality of life in postmenopausal women in rural Puducherry. *Indian Journal of Community Medicine*. 2020;45(1):96–99.
20. Sobczak K, Wochna K, Antosiak-Cyrak K, Domaszewska K. The effects of 6-month aqua aerobics training on cardiometabolic parameters in perimenopausal women: A randomized controlled trial. *Biology*. 2023;12:588. doi:10.3390/biology12040588.
21. Sumathy K, Manimozhi K. Beyond the hot flashes: Exploring the holistic approaches to menopause management – A review. *African Journal of Biomedical Research*. 2024;27(3):467–474.
22. Sumaningsih R, Ngestiningrum AH, Rahayu TP, Kasih AM. The effect of Mozart's music, Kitaro instruments, and spiritual music on menopausal depression. *Malaysian Journal of Medicine and Health Sciences*. 2024;20(Suppl 9):181–185.
23. Thomas A, Daley AJ. Women's views about physical activity as a treatment for vasomotor menopausal symptoms: A qualitative study. *BMC Women's Health*. 2020;20:203. doi:10.1186/s12905-020-01063-w.
24. Trujillo-Muñoz PJ, Sánchez-Ojeda MA, Rodríguez-Huamán EC, Mezyani-Haddu K, Hoyo-Guillot I, Navarro-Prado S. Effects of physical exercise on symptoms and quality of life in women in climacteric: A systematic review and meta-analysis. *Healthcare*. 2025;13:644. doi:10.3390/healthcare13060644.
25. Vijayakumar P, Vishwanathan K, Shobana V, Malathi S, Thivya N. Assessment of adverse symptoms of menopause among postmenopausal women in a selected rural community at Kancheepuram District, Tamil Nadu, India. *Medico-Legal Update*. 2020;20(2):217–220.