Original Article

Community-Based SENORITA Gymnastics for Improving Menopausal Symptoms and Quality of Life Among Postmenopausal Women: A Quasi-Experimental Study

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ABSTRACT

Background: Community-based, low-cost exercise programs are needed to support menopausal health in primary healthcare and resource-limited settings. SENORITA Gymnastics integrates low-impact aerobic exercise and breathing-focused Tera Gymnastics and may be feasible for delivery through community elderly health posts. This study aimed to evaluate SENORITA Gymnastics for its effects on menopausal symptoms and quality of life among postmenopausal women.

Methods: A quasi-experimental non-equivalent pretest-posttest control-group study was conducted among 60 postmenopausal women at Posyandu Lansia in the working area of the Gunungsari Primary Health Care Center, West Lombok, Indonesia. Participants were allocated to the SENORITA Gymnastics group (n = 30) or the routine elderly gymnastics/control group (n = 30). SENORITA Gymnastics was delivered in eight sessions, twice weekly for four weeks. Menopausal symptoms were measured using the Menopause Symptom Questionnaire, and quality of life was measured using the WHOQOL-BREF. Data were analyzed using descriptive statistics, between-group comparisons, and exploratory logistic regression.

Results: Menopausal symptom scores decreased descriptively in both groups, from 61.77 ± 16.26 to 53.93 ± 13.31 in the SENORITA Gymnastics group and from 67.03 ± 19.03 to 53.40 ± 13.87 in the control group. The numerically larger symptom reduction occurred in the control group. Post-test menopausal symptom scores differed significantly between groups (p = 0.035), with slightly lower scores in the control group. Quality-of-life scores increased descriptively in both groups, from 84.80 ± 10.23 to 88.70 ± 7.67 in the SENORITA Gymnastics group and from 78.93 ± 12.06 to 86.83 ± 8.43 in the control group. Post-test quality-of-life scores differed significantly between groups (p = 0.025). However, the SENORITA group already had higher baseline quality-of-life scores, and the descriptive improvement was larger in the control group. Age was the dominant factor associated with quality of life in the final logistic regression model (adjusted OR = 0.072; 95% CI: 0.019-0.273; p < 0.001).

Conclusion: SENORITA Gymnastics is feasible as a community-based health promotion activity for postmenopausal women. However, this study did not demonstrate the superiority of SENORITA Gymnastics over routine elderly gymnastics for reducing menopausal symptoms or improving quality of life. Future randomized or cluster-randomized studies with baseline-adjusted repeated-measures analysis, standardized control conditions, intervention fidelity assessment, and larger multicenter samples are needed.

Keywords: Menopause; Postmenopausal Women; Quality of Life; Exercise Therapy; Community Health; Primary Health Care.

Implications for Practice:

- Community nurses and midwives may integrate structured group exercise into routine menopausal care as a supportive health promotion strategy while monitoring menopausal symptoms and quality of life using standardized assessments.
- Health policies should support the implementation and evaluation of community-based exercise programs with standardized protocols, attendance monitoring, and outcome assessment to strengthen evidence-informed menopausal care.
- Midwifery education should strengthen competencies in menopause management, exercise counseling, and community-based health promotion to support evidence-based practice in Low- and Middle-Income Countries and other resource-constrained settings.

Introduction

Menopause is a natural transition in women's life course that results from declining ovarian function and the permanent cessation of menstruation. Although menopause is physiological, it may be accompanied by vasomotor complaints, sleep disturbance, musculoskeletal discomfort, fatigue, mood changes, urogenital symptoms, and reduced social participation. The global relevance of menopausal health is increasing because the population of postmenopausal women is growing; in 2021, women aged 50 years and older accounted for approximately 26% of all women and girls globally (World Health Organization, 2024). These problems are clinically relevant because the number of women living in midlife and older adulthood continues to increase, making menopausal health an important focus for nursing, midwifery, primary healthcare, and community health promotion (Crandall et al., 2023; Duralde et al., 2023).

Quality of life during and after menopause is multidimensional. It reflects physical health, psychological well-being, social relationships, environmental support, and the ability to maintain meaningful roles in family and community life. Menopausal symptoms can reduce quality of life through sleep problems, fatigue, anxiety, pain, and decreased participation in daily activities. However, quality of life is also shaped by age, education, employment, parity, body mass index, chronic disease, social support, and lifestyle behavior (Andayani & Guna, 2023; Baral & Kaphle, 2023; Hutchings et al., 2023).

In Indonesia, menopause-related health concerns are often managed within community and primary healthcare services. Local planning data in West Lombok showed a substantial number of women in the menopausal-age group, and the Gunungsari primary healthcare center was one of the settings with a large target population during the study-planning period (Dinas Kesehatan Kabupaten Lombok Barat, 2018). In this context, some women may underreport hot flushes, sexual discomfort, sleep disturbance, or urogenital symptoms because these topics can be considered private or culturally sensitive. Therefore, community-based programs need to combine health education, acceptable exercise, and supportive communication.

Nonpharmacological interventions remain important because not all postmenopausal women need, prefer, or are eligible for hormone therapy. Structured physical activity is a practical strategy that can be implemented through primary healthcare and community programs. Evidence from systematic reviews indicates that exercise-based interventions may improve physical functioning, sleep, mood, and quality of life among women experiencing menopause (Money et al., 2024; Nguyen et al., 2020; Trujillo-Muñoz et al., 2025). Nevertheless, previous studies

are not fully consistent. Some exercise interventions improve mood or quality of life more clearly than symptom burden. In contrast, symptom changes may depend on baseline severity, intervention intensity, participant age, and the type of comparison group.

SENORITA Gymnastics integrates low-impact aerobic exercise with Tera Gymnastics, a breathing- and relaxation-focused exercise. The aerobic component is expected to support cardiorespiratory fitness, mobility, energy, and perceived physical functioning (Godoy-Izquierdo et al., 2024; Zhao et al., 2022). The Tera Gymnastics component emphasizes controlled breathing, stretching, balance, relaxation, and body awareness, which conceptually aligns with mind-body approaches such as yoga, qigong, tai chi, and mindfulness-based interventions that have been associated with better sleep and psychological outcomes among peri and postmenopausal women(Fan et al., 2025; Liu et al., 2023; Shorey et al., 2020; Xu et al., 2024).

Orem's Self-Care Deficit Nursing Theory informed the intervention through the supportive-educative nursing system. In this study, the theoretical construct of self-care agency was operationalized through repeated guided practice, video-assisted demonstration, breathing and relaxation skills, self-monitoring of exercise tolerance, and encouragement to continue safe physical activity within the community setting. The supportive educative process was delivered by nurses, midwives, cadres, and trained students through explanation, demonstration, supervised practice, feedback, and safety monitoring. Thus, the theory was used to frame SENORITA Gymnastics as a mechanism for strengthening self-care capacity rather than as direct evidencef biological symptom reduction (Tanaka, 2022; Yip, 2021).

Despite growing evidence on exercise and menopausal health, locally implemented community-based interventions that integrate aerobic movement and breathing-focused exercise remain underreported in applied nursing and health settings. In addition, previous studies often emphasize symptom reduction without adequately examining quality of life determinants such as age, parity, and employment. Therefore, this study aimed to evaluate the effect of SENORITA Gymnastics on menopausal symptoms and quality of life among postmenopausal women and to identify factors associated with quality of life. Existing trials have also reported inconsistent effects on symptom reduction and quality of life, particularly when active comparators are used, and the present study explicitly addresses this gap in a community primary-healthcare setting in West Lombok, Indonesia.

Methods

Study Design

This study used a quasi-experimental pretest-post-test control group design and was reported in line with the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) statement for non-randomized evaluations. Data were collected from March to June 2021 in the working area of UPT BLUD Puskesmas Gunungsari, a primary healthcare center (Puskesmas) in West Lombok, Indonesia.

Because this was a community-based service setting, random allocation and allocation concealment were not applied. Participants were allocated non randomly according to community health-post setting and program feasibility. The SENORITA Gymnastics group received the combined low-impact aerobic exercise and Tera Gymnastics package, while the control group continued routine elderly

gymnastics/community activities available through Posyandu Lansia. The non-randomized allocation, baseline imbalance, and active comparison condition were treated as central methodological constraints; therefore, the findings are interpreted as associations and feasibility evidence rather than causal proof of intervention superiority (**Figure 1**).

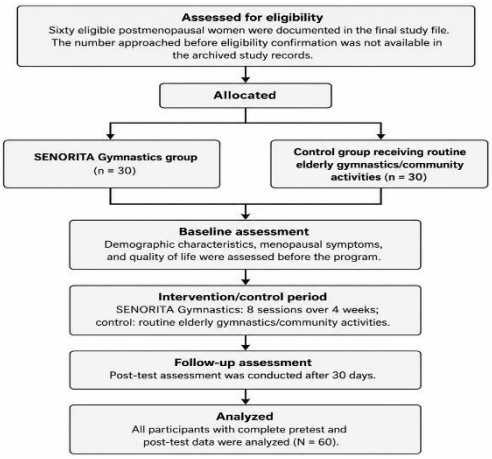

Figure 1. Participant flow following TREND reporting principles

Participants

The study population consisted of postmenopausal women registered at community-based elderly health posts in the study area. Participants were recruited using purposive sampling to ensure that eligible women could safely participate in mild to moderate physical activity and complete the measurement schedule.

The inclusion criteria were women aged 45-60 years, natural menopause defined as at least 12 consecutive months of amenorrhea, medical eligibility to join mild to moderate exercise, and written informed consent. The exclusion criteria were diagnosed cardiovascular or musculoskeletal disorders contraindicating exercise, current hormone replacement therapy, participation in another structured intervention outside the study routine, and severe psychiatric or cognitive impairment.

Recruitment followed a stepwise workflow: (1) the research team coordinated with the Puskesmas elderly care coordinator and Posyandu cadres to obtain the list of registered postmenopausal women; (2) potentially eligible women were invited through Posyandu meetings and home visits and screened against the inclusion and exclusion criteria; (3) eligible women received written and verbal information about the study and provided written informed consent before enrolment.

Sixty eligible women were enrolled and allocated into two groups: SENORITA Gymnastics (n = 30) and control/routine elderly gymnastics (n = 30). The sample size was based on community implementation feasibility and effect size considerations from comparable exercise intervention studies involving menopausal women. All participants with complete pretest and post-test data were included in the analysis. The minimum sample size was estimated using G*Power 3.1 (two independent means, two-tailed, $\alpha = 0.05$, power = 0.80, expected medium effect size $f = 0.40$ derived from comparable community-based menopausal exercise studies), yielding a minimum of 26 participants per group; 30 per group were recruited to accommodate possible dropout. All 60 participants completed pretest and post-test assessments; no participants were lost to follow-up, and no participants were excluded after enrolment; complete per-session adherence percentages were not available in the archived statistical output.

Instruments

Menopausal symptoms were measured using the Menopause Symptom Questionnaire (MSQ), which was administered through structured interviews. Quality of life was measured using the World Health Organization Quality of Life Questionnaire-BREF (WHOQOL-BREF). Both instruments are

standardized questionnaires originally developed in English and translated into Indonesian before being used in this study.

The MSQ captures common somatic, vasomotor, and psychological menopausal complaints, with higher scores indicating a greater symptom burden (Khalaf et al., 2025). The MSQ used in this study consisted of 25 items covering two domains: physiological aspects, comprising items 1–11, and psychological aspects, comprising items 12–25. Each item was rated on a five-point Likert scale, ranging from 1 = never to 5 = always, and the total score ranged from 25 to 125.

The WHOQOL-BREF assesses four domains of quality of life: physical health, psychological health, social relationships, and environment. The instrument consists of 26 items across these four domains plus two general items, and the scores were transformed into a 0–100 scale, with higher transformed scores indicating better quality of life. The Indonesian version of the WHOQOL-BREF has been used in Indonesian populations and has demonstrated acceptable psychometric properties, including discriminant validity, construct validity, and internal consistency (Komalasari et al., 2025; Ramji et al., 2023).

Because these instruments were not newly developed by the authors, formal construct validity testing was not repeated in the present study. Validity and reliability evidence were therefore based on the original and previous validation studies of the instruments, as well as on the established use of the Indonesian version of the WHOQOL-BREF in Indonesian populations.

To support linguistic and contextual appropriateness, the English questionnaires were translated into Indonesian and reviewed for semantic, conceptual, and cultural equivalence. The translated questionnaires were then pilot-tested with 10 postmenopausal women outside the study sample to assess item clarity, comprehensibility, and feasibility of administration. Minor wording clarifications were made where necessary without changing the intended meaning of the items.

Cronbach's alpha values for the present study sample could not be recalculated because item-level raw data were no longer available in the archived dataset. Therefore, to avoid unsupported reporting, Cronbach's alpha values were not reported for the present sample. This issue is acknowledged as a measurement-reporting limitation. Nevertheless, the use of standardized instruments, previous psychometric evidence, translation review, pilot testing, and standardized interviewer-assisted administration was applied to support measurement quality.

Both questionnaires are provided as **Supplementary File S1**. Interrater reliability was not applicable because both instruments are structured self-report questionnaires administered through interviewer-assisted procedures, rather than observational rating scales. To minimize interviewer-related variation, all data collectors received standardized training on questionnaire administration, scoring procedures, confidentiality, and participant assistance.

Intervention

The SENORITA Gymnastics program combined low-impact aerobic exercise and Tera Gymnastics. Based on the study questionnaire/SOP file, the program was delivered in 8 sessions, twice weekly for 4 weeks, with each session lasting approximately 30 minutes. Each session included warm-up, low-impact aerobic movement, Tera Gymnastics breathing/stretching/relaxation, and cool-down. Exercise intensity was intended to remain mild to moderate, guided by participant tolerance, the ability to speak

during activity, pulse observation when needed, and immediate rest if dizziness, chest pain, excessive fatigue, severe shortness of breath, or musculoskeletal pain occurred.

The program was supervised by the principal investigator and assisted by eight field personnel consisting of a coordinating midwife from the primary healthcare center, a midwife responsible for the elderly program, a village midwife, two community health cadres, and three final-year DIII midwifery students. These personnel supported attendance monitoring, participant assistance, vital sign checks, and safety observation.

Intervention fidelity was supported by using the same SENORITA Gymnastics video, standardized demonstration steps, attendance records, and supervision during each session. Safety monitoring included measurement of body weight, height, blood pressure, and pulse before the intervention period and observation for fatigue, dizziness, excessive pain, or other complaints during sessions. Participants were advised to stop exercising and report symptoms if discomfort occurred. Because detailed adherence percentages and session-by-session attendance summaries were not preserved in the archived output, intervention fidelity can be described procedurally but not quantified statistically.

The control group continued routine elderly gymnastics or routine community activities available through the Posyandu Lansia setting and did not receive the full SENORITA Gymnastics package. Routine activities generally included light group exercise, social interaction, and community health education delivered through existing elderly health-post activities. Frequency, exact duration, exercise intensity, and supervision were not standardized by the research team and were not documented with the same detail as the SENORITA protocol. Because this was an active comparison condition rather than no treatment, any observed post-test difference must be interpreted as the added value of SENORITA Gymnastics over routine community practice, not as the effect of exercise versus inactivity (**Table 1**).

Table 1. Standardized SENORITA Gymnastics intervention workflow

Component	Procedure
Program dose	Eight sessions, twice weekly for four weeks; approximately 30 minutes per session.
Pre-session safety check	Confirm attendance; review participant condition; measure or review blood pressure/pulse when needed; remind participants to exercise within tolerance.
Warm up	Approximately 5 minutes of light joint and muscle preparation before the core exercise.
Low-impact aerobics component	Approximately 15 minutes of rhythmic low-impact movement guided by video and instructor demonstration; intensity maintained at a mild to moderate level using tolerance/talk test principles.
Tera Gymnastics component	Approximately 7 minutes of breathing-focused stretching, balance, relaxation, and body awareness movements.
Cool-down	Approximately 3 minutes of gradual slowing, breathing exercise, relaxation, and comfort check.
Fidelity and adherence monitoring	Same video-assisted sequence, instructor checklist, attendance list, and field supervision were used across sessions; detailed adherence percentages were not available in archived output.
Safety response	Stop exercise if dizziness, chest pain, severe shortness of breath, excessive fatigue, or musculoskeletal pain occurs; provide rest and refer to health personnel when needed.

Data Collection

Baseline data were collected before the intervention, and post-test data were

collected within one week after completion of the four week/eight session program. Demographic and health-related variables included age, education, employment status, parity, and body mass index. The outcome variables were menopausal symptom score and quality-of-life score.

Participant anonymity was maintained using unique identification codes, and completed data were stored securely by the research team. Pretest data were collected during the week before the intervention started in March 2021, and post-test data were collected after completion of the program in June 2021. The data collection team comprised eight trained enumerators (one Puskesmas midwifery coordinator, one elderly care midwife, one village midwife, two Posyandu cadres, and three final semester DIII midwifery students), all of whom completed one day of structured training covering standardized interviewing, scoring, confidentiality, and safety monitoring. Completed questionnaires were double entered into Microsoft Excel by two independent staff and discrepancies were resolved against the original forms. No missing data were observed for the primary pretest and post-test outcome scores.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM Corp., Armonk, NY, USA). Categorical variables were summarized as frequency and percentage, while continuous variables were summarized as mean and standard deviation (SD). Normality was assessed using the Shapiro-Wilk test. Post-test menopausal symptom scores were normally distributed in both groups; therefore, the between-group post-test symptom comparison was summarized using an independent/Welch t-test and Cohen's d. Post-test quality of life scores were not normally distributed; therefore, the Mann-Whitney U test and effect size r were used for the between-group quality of life comparison.

Because the design was a non-equivalent pretest-posttest study with baseline imbalance, baseline-adjusted ANCOVA, generalized linear modeling, or mixed effects modeling would have been the preferred analytical strategy. However, individual-level raw data and the variance-covariance information required for baseline-adjusted repeated measures modeling were not available in the archived statistical output used for this revision. Therefore, pretest, post-test, and descriptive change values are reported transparently, and causal interpretation is intentionally downgraded. Change score inferential tests are not reported because the SD of change and paired individual-level data were unavailable for all outcomes.

Binary logistic regression was retained only as an exploratory secondary analysis to identify factors associated with quality of life category in the archived SPSS output. The WHOQOL-BREF is fundamentally a continuous score; therefore, dichotomization into a quality of life category may reduce information and statistical power. Variables with $p <= 0.25$ in bivariate analysis were considered eligible for multivariable analysis, but the small sample size limited model stability. Model interpretation used odds ratio (OR), 95% confidence interval (CI), and p-value; however, calibration, discrimination, multicollinearity diagnostics, and complete model-fit indices were not available. Regression findings are therefore interpreted as hypothesis-generating rather than confirmatory.

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee, Faculty of Medicine, University of Mataram, Indonesia, through Decision Letter No.

33/UN18.F7/ETIK/2021. All participants received information about the study objectives, procedures, benefits, voluntary participation, and confidentiality. Written informed consent was obtained before data collection, and participants could withdraw without consequences for their access to health services. Participant anonymity was maintained using unique identification codes. Only the research team had access to completed forms and analysis files. Adverse events or exercise-related complaints were monitored during sessions and were to be managed through rest, discontinuation of activity, and referral to health personnel when needed.

Results

Table 2 illustrates baseline characteristics and outcome scores among 60 postmenopausal women. The study included 30 participants in the SENORITA Gymnastics group and 30 participants in the control group. Age distribution differed between groups, with more women aged below 50 years in the SENORITA Gymnastics group and more women aged 50 years or older in the control group. BMI distribution also differed between groups. Education level, employment status, and parity were comparable between groups.

Table 2. Baseline Characteristics of Participants and Outcome Scores (N = 60)

Variables	Category	n (%) / Mean ± SD		p
		SENORITA (n = 30)	Control (n = 30)	
Age (years)				
	< 50	18 (60)	9 (30)	0.020*
	≥ 50	12 (40)	21 (70)	
Education				
	Senior high school	1 (3.3)	1 (3.3)	
	≤ Junior high school	29 (96.7)	29 (96,7)	1,000
Work status				
	Working	3 (10)	4 (13.3)	
	Not working	27 (90)	26 (86.7)	1,000
Parity				
	< 4	11 (36.7)	11 (36.7)	
	≥ 4	19 (63,3)	19 (63.3)	1,000
BMI				
	Normal	22 (73.3)	15 (50)	0.063
	Abnormal	8 (26.7)	15 (50)	
Menopausal Symptoms				
	Pretest	61.77±16.26	67.03±19.03	0.035*
	Post-test	53,93±13.31	53.40±13.87	
Quality of Life				
	Pretest	84.80±10.23	78.93±12.06	0.025*
	Post-test	88.70±7.67	86.83±8.43	

Note. Data are presented as n (%) or mean ± SD. SD = standard deviation; BMI = body mass index. For demographic variables, p-values were obtained using the chi-square test or Fisher's exact test as appropriate. For outcome scores, p-values marked with an asterisk refer to post-test between-group comparisons only. The independent t-test was used for menopausal symptom score, and the Mann-Whitney U test was used for quality of life score.

Menopausal Symptoms and Quality of Life Outcomes

Based on **Table 2,** menopausal symptom scores decreased descriptively in both groups. The SENORITA Gymnastics

group showed a decrease from 61.77 ± 16.26 at pretest to 53.93 ± 13.31 at post-test, with a descriptive change of -7.84. The routine elderly gymnastics/control group showed a decrease from 67.03 ± 19.03 at pretest to 53.40 ± 13.87 at post-test, with a descriptive change of -13.63. Because lower scores indicate lower symptom burden, the numerically larger descriptive reduction was observed in the routine elderly gymnastics/control group.

The between-group comparison showed a statistically significant difference in menopausal symptom scores (p = 0.035). However, because the post-test symptom score was slightly lower in the control group than in the SENORITA Gymnastics group, the direction of this finding does not support the superiority of SENORITA Gymnastics over routine elderly gymnastics for reducing menopausal symptoms.

Quality of life scores increased descriptively in both groups. The SENORITA Gymnastics group increased from 84.80 ± 10.23 at pretest to 88.70 ± 7.67 at post-test, with a descriptive change of 3.90. The routine elderly gymnastics/control group increased from 78.93 ± 12.06 at pretest to 86.83 ± 8.43 at post-test, with a descriptive change of 7.90. The between-group comparison showed a statistically significant difference in quality-of-life scores (p = 0.025). However, this result should be interpreted cautiously because the SENORITA Gymnastics group already had a higher pretest quality of life score than the control group, and the descriptive increase was numerically larger in the control group.

Overall, the findings indicate that SENORITA Gymnastics was feasible as a community-based exercise intervention for postmenopausal women. However, based on the observed outcome patterns in **Table 2,** the available data do not establish the superiority of SENORITA Gymnastics over routine elderly gymnastics for either menopausal symptom reduction or quality-of-life improvement.

Factors Associated with Quality of Life Among Postmenopausal Women

Table 3 presents bivariate associations between participant characteristics, menopausal symptoms, and quality of life. Age, work status, and parity were associated with quality of life in bivariate analysis. Education, BMI, and menopausal symptoms were not statistically significant in bivariate analysis, although variables with p ≤ 0.25 were considered for multivariable modeling according to the analysis plan.

Table 3. Bivariate Analysis of Factors Associated with Quality of Life Among Postmenopausal Women

Variable	OR (95% CI)	p
Age	11.756 (3.413-40.484)	<0.001
Education	2.231 (1.677-2.968)	0.124
Work	5.395 (1.785-16.302)	0.002
Parity	3.095 (1.010-9.485)	0.044
BMI	0.800 (0.284-2.253)	0.673
Menopausal Symptom	0.454 (0.160-1.286)	0.13

Note. OR = odds ratio; CI = confidence interval; BMI = body mass index. Variables with p ≤ 0.25 in the bivariate analysis were considered eligible for multivariable logistic regression.

Table 4. Multivariable Logistic Regression Analysis of Factors Affecting Quality of Life Among Postmenopausal Women

Variable	p-value	OR / Exp(B)	Std.Error	95% CI	
				Lower	Upper
Age	<0.001	0.072	0.676	0.019	0.273
Menopausal symptom score	0.091	3.087	0.667	0.835	11.416

Note: OR = odds ratio; CI = confidence interval.

Table 4 shows that age remained the only statistically significant factor in the final exploratory logistic regression model. Women in the older age category had lower odds of being classified in the better quality of life category after adjustment for other variables retained in the model. Menopausal symptom score was not statistically significant in the final model. Because the sample size was small and diagnostics were incomplete, this result should be understood as hypothesis-generating evidence that age may be an important stratification or adjustment variable in future studies.

Discussion

This study evaluated SENORITA Gymnastics as a community-based exercise program for postmenopausal women. The findings should be interpreted cautiously because the study used non-randomized allocation, the groups differed at baseline, and the control group was active rather than inactive. Based on the updated outcome pattern, both groups showed descriptive improvement in menopausal symptom scores and quality of life scores. However, the reduction in menopausal symptom scores was numerically greater in the routine elderly gymnastics/control group than in the SENORITA Gymnastics group. Although post-test quality of life scores were slightly higher in the SENORITA Gymnastics group, the SENORITA group already had higher baseline quality of life scores, and the descriptive increase was numerically larger in the control group. Thus, the most defensible interpretation is that SENORITA Gymnastics is feasible and acceptable as a community-based exercise activity, but its superiority over routine elderly gymnastics for reducing menopausal symptoms or improving quality of life was not demonstrated.

The quality of life findings are consistent with evidence that physical activity and exercise interventions may improve physical function, mood, sleep, vitality, and overall quality of life among women experiencing menopause (Money et al., 2024; Nguyen et al., 2020; Trujillo-Muñoz et al., 2025). Low-impact aerobic exercise can improve circulation, musculoskeletal mobility, energy, and perceived physical functioning. In addition, network meta-analysis evidence supports aerobic and multimodal physical activity for psychological well-being among peri- and postmenopausal women (Wang, Li et al., 2025). However, in the present study, the available data do not allow a strong conclusion that these potential benefits were specifically attributable to SENORITA Gymnastics because the control group also received routine community exercise activities.

The Tera Gymnastics component may have contributed through breathing regulation, relaxation, balance, and body awareness. These mechanisms are compatible with mind-body approaches that aim to reduce sympathetic activation, improve sleep, and support emotional regulation (Fan et al., 2025; Liu et al., 2023; Wang, Wang, et al., 2025; Xu et al., 2024). A randomized intervention on mindfulness for menopausal women also showed improvement in menopause specific quality of life and psychological well-being (Amin et

al., 2025). These findings support the biological and psychosocial plausibility of integrating movement, breathing, and relaxation in community menopausal care. Nevertheless, the present study should be interpreted as providing feasibility-oriented and exploratory evidence rather than confirmatory evidence of intervention superiority.

The absence of superior symptom reduction in the SENORITA Gymnastics group may be explained by active control effects. The control group continued routine elderly gymnastics or community activities, meaning that both groups may have received physical activity, social interaction, and health promotion exposure. This active comparison condition could reduce the observable incremental effect of SENORITA Gymnastics. Baseline differences also matter: the groups differed in age and quality of life scores at baseline, and BMI distribution showed imbalance. Such differences may influence symptom perception, physical tolerance, participation, adaptation to exercise, and quality of life. Because the study was not randomized and baseline-adjusted analysis was not available, residual confounding cannot be excluded.

Cultural and community health context may also shape the findings. In Posyandu Lansia settings, group exercise can provide social support, routine, peer encouragement, and informal health education. At the same time, some menopausal symptoms, particularly sexual or urogenital concerns, may be underreported because they are perceived as private or sensitive. Therefore, symptom scores may not fully capture the perceived benefit of group-based exercise, while quality of life may improve through social participation, self efficacy, and supportive interaction.

Orem's Self Care Deficit Nursing Theory helps explain the nursing relevance of the intervention. Through the supportive educative nursing system, nurses, midwives, and community health workers can strengthen self-care capacity by providing knowledge, demonstrating skills, motivating repeated practice, and monitoring safety. In this study, SENORITA Gymnastics operationalized supportive education through video-assisted demonstration, guided practice, structured group activity, and community support. These components may enhance self-care agency by encouraging women to participate in regular physical activity, recognize bodily responses during exercise, and engage in safe health-promoting behavior. Therefore, the intervention has value as a feasible self-care support strategy, even though symptom reduction and quality of life improvement were not clearly superior to routine elderly gymnastics.

Age was the dominant factor associated with quality of life in the final multivariable model. This finding is consistent with the view that menopausal quality of life is influenced not only by symptoms but also by age-related physiological changes, comorbidity accumulation, functional status, social roles, and adaptation (Baral & Kaphle, 2023; The North American Menopause Society, 2023). Community programs should therefore avoid treating postmenopausal women as a homogeneous group. Age, functional capacity, BMI, baseline symptoms, baseline quality of life, and preferred exercise intensity should guide screening, counseling, and program adaptation.

Employment status and parity were associated with quality of life in the bivariate analysis. Employment may reflect social engagement, economic resources, autonomy, or access to health information, while higher parity may reflect cumulative reproductive, caregiving, and household burden. However, these variables were not

retained as significant predictors in the final logistic regression model. Menopausal symptom score was also not statistically significant in the final model, although its direction of association suggests potential clinical relevance. Future studies should include larger samples, complete repeated measures analysis, baseline-adjusted modeling, and regression diagnostics to strengthen the explanatory model.

Implications and limitations

This study suggests that SENORITA Gymnastics is a feasible, low-cost, community-based exercise program that can be integrated into primary healthcare and Posyandu Lansia as a supportive health-promotion activity for postmenopausal women, although it did not demonstrate superiority over routine elderly gymnastics in improving menopausal symptoms or quality of life. The findings should be interpreted cautiously because of the non-randomized design, baseline imbalance, modest sample size, active control condition, and limited statistical reporting, which restrict causal inference and generalizability. Future research should employ randomized or cluster-randomized multicenter designs with larger samples, baseline-adjusted repeated-measures analyses, standardized intervention protocols, intervention fidelity assessment, longer follow-up, and comprehensive reporting of reliability and regression diagnostics to strengthen the evidence base.

Relevance to Practice

Nurses, midwives, and community health workers may integrate SENORITA Gymnastics into Posyandu Lansia or primary healthcare as a low-cost, culturally acceptable supportive exercise program for postmenopausal women, while recognizing that the present study did not demonstrate superiority over routine elderly gymnastics. Implementation should include routine screening of menopausal symptoms and quality of life, individualized exercise counseling based on age and functional capacity, safety monitoring, and appropriate referral for women with severe symptoms. In resource-limited settings, the program can be delivered using simple equipment and trained community cadres, with standardized protocols, attendance and adherence monitoring, and ongoing training to ensure safe, consistent, and sustainable implementation.

Conclusion

SENORITA Gymnastics is a feasible community-based health promotion program for postmenopausal women in primary healthcare and Posyandu Lansia settings. However, this quasi-experimental study did not demonstrate its superiority over routine elderly gymnastics in reducing menopausal symptoms or improving quality of life. Age was the strongest factor associated with quality of life and should be considered when designing and implementing community exercise programs for postmenopausal women. Further randomized or cluster-randomized multicenter studies with standardized control conditions, baseline-adjusted repeated-measures analyses, intervention fidelity assessment, adherence monitoring, and larger samples are needed to establish the effectiveness of SENORITA Gymnastics.

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CrediT Authorship Contributions Statement

Ni Putu Karunia Ekayani: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Project Administration.

Linda Meliati: Supervision, Validation, Methodology, Writing – Review & Editing, Visualization.
Sukaisi: Supervision, Resources, Validation, Writing – Review & Editing.

Conflicts of Interest

There is no conflict of interest.

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Supplementary Materials

Supplementary File S1: Research Instrument contains the full questionnaire used for data collection.

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