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From Women's Midlife Health to Family Resilience: Effectiveness of a Clinic-to-Home Integrated Nursing Intervention on Menopausal Well-Being, Psychological Resilience, and Healthy Aging among Older Adults in Multigenerational Families

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ABSTRACT:

Background: The menopausal transition and the challenges of aging create complex physical, psychological, and social demands, particularly within multigenerational families. Midlife women and older adults may experience overlapping health needs and caregiving responsibilities, while fragmented healthcare services can limit continuity of care and family support. Integrating clinic-based nursing care with home visits and family-centered interventions may improve menopausal well-being, strengthen psychological and family resilience, and promote healthy aging. Aim: This study aimed to evaluate the effectiveness of a Clinic-to-Home Integrated Nursing Intervention on menopausal well-being, psychological resilience, and healthy aging in multigenerational families.

Subjects and Methods: A two-arm, parallel, family-cluster randomized controlled trial was conducted at the Gynecology and Obstetrics Outpatient Clinics of Sohag University Hospitals, Sohag Governorate, Egypt. The study included 240 participants from 120 multigenerational family units, comprising 120 midlife women and 120 older adults. Eligible family units were recruited purposively and randomly allocated to the intervention or control group. Each group included 60 midlife women and 60 older adults.

Tools: Tool I: Structured interview questionnaire for sociodemographic, clinical, and family characteristics, Tool II: Menopause Rating Scale (MRS), Tool III: WHO-5 Well-Being Index, Tool IV: Connor–Davidson Resilience Scale—10-item version (CD-RISC-10), Tool V: Multidimensional Scale of Perceived Social Support (MSPSS), Tool VI: Walsh Family Resilience Questionnaire (WFRQ), and Tool VII: Healthy-Aging Assessment Form. Data were collected at baseline and immediately after the 12-week intervention using structured assessment instruments.

Results: The findings demonstrated significant improvements in the intervention group compared with the control group. Severe and very severe menopausal symptoms decreased from 53.4% to 18.3% ($p < 0.001$). Psychological well-being improved among midlife women, with mean WHO-5 scores increasing from 42.6 ± 12.1 to 68.4 ± 11.2, and among older adults, increasing from 45.2 ± 11.4 to 65.1 ± 10.8 ($p < 0.001$). Psychological resilience among older adults increased from 20.8 ± 5.2 to 30.6 ± 4.7 ($p < 0.001$). Perceived social support and family resilience also improved in the intervention group compared with the control group ($p < 0.001$). Healthy-aging indicators, including functional performance, social participation, and health management, demonstrated significant changes. Positive correlations were observed between perceived family support, family resilience, psychological well-being, and healthy-aging indicators ($r = .54–.62$, $p < 0.001$).

Conclusion: The Clinic-to-Home Integrated Nursing Intervention demonstrated significant effects on menopausal well-being, psychological resilience, perceived family support, family resilience, and healthy-aging indicators.

Recommendations: Integrating structured menopause education, individualized healthy-aging support, family-centered activities, and home follow-up into nursing services is recommended to strengthen individual and family resilience and promote health across generations.

Introduction

The menopausal transition represents an important stage in women's lives and may be accompanied by physical, psychological, and social changes that influence daily functioning and quality of life. Symptoms may include vasomotor disturbances, sleep difficulties, musculoskeletal discomfort, changes in mood, and reduced sexual well-being. The experience of menopause varies considerably among women and is influenced by individual health status, lifestyle, cultural beliefs, and access to appropriate health information and support. Consequently, nursing care during midlife extends beyond symptom recognition to include individualized education, psychological support, healthy lifestyle promotion, and guidance regarding when professional assessment is needed **(World Health Organization [WHO], 2024; Velasco-Téllez et al., 2020).**

Older adults may experience multiple health and functional challenges, including chronic diseases, reduced mobility, nutritional difficulties, sensory changes, and increased dependence on family members **(Gianfredi et al., 2025).** However, chronological age alone does not adequately represent an individual's health or functional capacity. Healthy-aging initiatives therefore emphasize the maintenance of intrinsic capacity, functional ability, participation, and independence while addressing individual health and social needs. Person-centered assessment, individualized care planning, health education, and appropriate follow-up represent important components of integrated care for older adults **(WHO, 2025).**

Multigenerational families provide an important context for understanding the relationship between individual health and family functioning. Midlife women may simultaneously manage menopausal symptoms, employment, household responsibilities, and caregiving for older relatives. Older adults, in turn, may depend on family members for emotional support, health-related assistance, transportation, and access to healthcare services. These reciprocal relationships create opportunities for shared learning and mutual support, but they may also contribute to stress when caregiving responsibilities are poorly distributed or family communication is limited. Family resilience involves the relational processes through which family members mobilize resources, communicate effectively, maintain shared beliefs, and adapt to stressful circumstances **(Schulz et al., 2020; Sabah et al., 2025).**

Clinic-based healthcare provides opportunities for assessment, education, and referral; however, the application of health recommendations may be influenced by household circumstances, family relationships, financial limitations, and the availability of ongoing support. Home visits help nurses understand the individual's living environment, identify practical barriers to self-care, reinforce health information, and involve family members in appropriate supportive activities **(Kreuter et al., 2025).** Integrating clinic-based nursing care with home follow-up is consistent with person-centered approaches that link assessment, individualized care planning, health promotion, and continuing support. For older adults, the WHO Integrated Care for Older People framework similarly emphasizes personalized assessment and coordinated interventions that address functional ability and social support **(WHO, 2025)**.

In a clinic-to-home integrated nursing intervention, the nurse serves as a care coordinator, educator, and psychosocial supporter who bridges clinical healthcare settings with the daily home environment of multigenerational families **(Shaban et al., 2025).** Within the clinic, the nurse conducts holistic biopsychosocial assessments of midlife women and older adults to identify menopausal symptoms, psychological distress, and age-related vulnerabilities, subsequently formulating individualized care plans **(Periyakaruppan et al., 2025)**. Extending care into the home, the nurse delivers structured health education on symptom management, healthy lifestyle modifications, and stress-reduction techniques to enhance menopausal well-being and promote healthy aging **(Badawy et al., 2024).** Furthermore, engaging family members across generations strengthens interpersonal communication, supports shared decision-making, and fosters collective psychological resilience. This continuous, nurse-led model encourages both women and older adults to adopt sustainable self-care behaviors and contributes to improved family health outcomes **(Zarzaur et al., 2024).**

Significance of the study

The significance of this study lies in addressing the interconnected health needs of midlife women and older adults within their shared family environment. Menopausal symptoms may negatively affect women's psychological well-being and daily functioning **(Spector et al., 2024)**, while age-related health and functional changes may increase family caregiving responsibilities. Therefore, an integrated clinic-to-home nursing intervention can promote menopausal well-being, psychological support, healthy aging, and family engagement through continuous, person-centered care **(WHO, 2025).** Furthermore, the study evaluates individual outcomes, including menopausal well-being, psychological well-being, psychological

resilience, and healthy-aging indicators, alongside family-related outcomes, including perceived social support and family resilience. This comprehensive approach provides evidence regarding the potential benefits of intergenerational, family-centered nursing interventions and supports the development of sustainable clinic-to-home care strategies.

Aim of the study

This study aimed to evaluate the effectiveness of a Clinic-to-Home Integrated Nursing Intervention on menopausal well-being, psychological resilience, and healthy aging in multigenerational families.

Research hypotheses

- **H1:** Midlife women in the intervention group demonstrate a greater reduction in menopausal symptom severity than women in the control group.
- **H2:** Midlife women in the intervention group demonstrate greater improvement in psychological well-being than women in the control group.
- **H3:** Older adults in the intervention group demonstrate greater improvement in psychological resilience than older adults in the control group.
- **H4:** Families receiving the integrated nursing intervention demonstrate greater improvement in perceived family support and family resilience than families receiving standard care.
- **H5:** Older adults in the intervention group demonstrate greater improvement in the prespecified healthy-aging indicators than older adults in the control group.
- **H6:** Improvements in perceived family support and family resilience are positively associated with improvements in psychological well-being and selected healthy-aging indicators after accounting for relevant participant characteristics and family-level clustering.

SUBJECTS AND METHODS

Research design

A two-arm, parallel, family-cluster randomized controlled trial was conducted to evaluate the effectiveness of the Clinic-to-Home Integrated Nursing Intervention. Family units, rather than individual participants, were randomized to reduce the likelihood that intervention materials or activities were shared between intervention and control participants within the same family. Accordingly, the family unit represented the unit of randomization, whereas the midlife woman and older adult represented the individual participants.

Study setting

The study was conducted at the Gynecology and Obstetrics Outpatient Clinics of Sohag University Hospitals, Sohag Governorate, Egypt. Eligible midlife women were recruited through the outpatient clinics. Older adults were recruited from the multigenerational family units of participating women, provided that they met the eligibility criteria and agreed to participate. The home component was delivered at participants' residences within the designated service area. The clinic component provided baseline assessment, structured education, symptom-related guidance, and referral when indicated. The home component reinforced the information provided in the clinic, supported individualized health goals, assessed environmental and family-related barriers, and promoted appropriate participation by older adults and family members.

Study population

The study population consisted of midlife women experiencing the menopausal transition or postmenopausal stage and older adults belonging to their multigenerational family units.

The operational age ranges were defined as follows:

- **Midlife women:** Women aged 40–59 years who were experiencing the menopausal transition or postmenopausal stage according to the study eligibility criteria.

- **Older adults:** Adults aged 60 years or older.

Sample size and sampling technique

The study included 240 individual participants, comprising 120 midlife women and 120 older adults from 120 family units. Purposive sampling was used to recruit eligible families through the outpatient clinics and their associated family networks. After eligibility screening, informed consent, and baseline assessment, family units were randomly allocated to the intervention or control group.

Sample distribution

Study component	Number
Total family units	120
Midlife women	120
Older adults	120
Total individual participants	240
Intervention family units	60
Control family units	60
Midlife women in the intervention group	60
Midlife women in the control group	60
Older adults in the intervention group	60
Older adults in the control group	60

Sample-size calculation

The required sample size was calculated using the conventional formula for comparing two independent group means for the prespecified primary continuous outcome:

$$[n=\frac{2(Z_{a/2}+Z_{\beta})^2\sigma^2}{\Delta^2}]$$

Where:

- n = required number of participants per group before cluster adjustment.
- Z_alpha/2 = standard normal value corresponding to the two-sided significance level.
- Z_beta = standard normal value corresponding to the desired statistical power.
- sigma = expected standard deviation of the primary outcome.
- Delta = expected difference between the intervention and control groups.

Because the study used family-level randomization, the individual-level sample-size estimate was adjusted for clustering using the design effect:

$$[DE=1+(m\text{-}1)\times ICC]$$

Where:

- DE = design effect.
- m = average number of participants within each family cluster.
- ICC = intracluster correlation coefficient.

Each family included two participants; therefore, m=2.

The cluster-adjusted sample size was calculated as:

$$[n_{cluster\text{-}adjusted} = n_{individual} \times DE$$

The final sample size was adjusted for anticipated attrition:

$$[n_{final} = \frac{n_{cluster\text{-}adjusted}}{1\text{-}r}]$$

Where r represented the anticipated attrition proportion.

The completed study sample comprised 120 family clusters and 240 individual participants, with 60 family clusters allocated to each study arm **(Campbell et al., 2012).**

Randomization and allocation

After eligible family units had been recruited and baseline data had been collected, a computer-generated random sequence was used to allocate the family units in a 1:1 ratio. Sixty family units were assigned to the intervention group, and 60 family units were assigned to the control group. All enrolled members of each family unit were assigned to the same study arm to minimize contamination between groups. The allocation sequence was generated by an individual who was not responsible for participant recruitment or outcome assessment. Allocation concealment was maintained until each family unit had completed eligibility screening and baseline assessment. Where feasible, outcome assessors and the statistician remained unaware of group allocation. Because the intervention involved education, family activities, and home visits, blinding of participants and intervention providers was not feasible. Measures were therefore taken to minimize measurement and analysis bias.

Inclusion criteria

Midlife women

1. Women were aged 40–59 years.
2. Women were experiencing the menopausal transition or postmenopausal stage according to the study eligibility criteria.
3. Women were able to participate in the educational and assessment sessions.
4. Women had an eligible older adult within the same multigenerational family unit.
5. Women were willing to participate and provided informed consent.

Older adults

1. Adults were aged 60 years or older.
2. Older adults belonged to the family units of enrolled midlife women.
3. Older adults were able to participate independently or with appropriate communication or mobility accommodations.
4. Older adults were willing to participate and provided informed consent, or consent was obtained through an approved legally authorized representative when appropriate.

Exclusion criteria

Potential participants were excluded if they had any of the following conditions:

1. A severe acute illness that prevented safe participation at baseline.

2. A medical or psychological condition requiring immediate assessment or treatment that could not appropriately be addressed within the study.
3. A communication difficulty that could not be accommodated through appropriate support.
4. Inability or unwillingness to complete the study assessments or participate in the intervention procedures.

Data collection tools

The following tools were arranged according to the sequence used for data collection. Their administration, translation, scoring, and permission requirements were addressed according to the study protocol.

Tool I: Structured interview questionnaire for sociodemographic, clinical, and family characteristics

A structured interview questionnaire was developed by the researcher to collect baseline information about the participating midlife women and older adults. The questionnaire provided information for describing the sample, assessing baseline comparability, and identifying factors that could influence the study outcomes.

Part A: Sociodemographic characteristics

Information collected from midlife women included age, educational level, marital status, employment status, residence, and relevant household characteristics.

Information collected from older adults included age, sex, educational level, marital status, living arrangement, and relationship to the participating woman.

Part B: Clinical characteristics

For midlife women, the questionnaire covered menopausal status, relevant menstrual history, previous menopause-related consultations, current treatment, chronic illnesses, medication use, smoking status where relevant, physical activity, and previous health education.

For older adults, the questionnaire covered chronic illnesses, current medications, mobility limitations, use of assistive devices, recent falls, sensory difficulties, nutritional concerns, and healthcare utilization.

Part C: Family and caregiving characteristics

The questionnaire documented household composition, frequency of contact between family members, caregiving responsibilities, perceived caregiving burden where appropriate, and the availability of assistance with daily activities.

Tool II: Menopause Rating Scale (MRS)

The Menopause Rating Scale (MRS) was used to assess the severity of menopausal symptoms among midlife women. It consisted of 11 items covering three domains: somatic symptoms, including hot flushes, heart discomfort, sleep problems, and muscle or joint discomfort; psychological symptoms, including depressive mood, irritability, anxiety, and physical or mental exhaustion; and urogenital symptoms, including sexual problems, bladder symptoms, and vaginal dryness. Each item was scored on a five-point Likert scale ranging from 0 to 4, where 0 indicated no symptoms, 1 mild, 2 moderate, 3 severe, and 4 very severe symptoms. The total score ranged from 0 to 44, with higher scores indicating greater menopausal symptom severity. Domain scores were calculated by summing the scores of their respective items. The total and domain scores were analyzed as continuous variables, with reductions in scores from baseline to follow-up indicating improvements in menopausal symptom severity **(Heinemann et al., 2004).**

Tool III: WHO-5 Well-Being Index

The WHO-5 Well-Being Index was used to assess subjective psychological well-being among participating midlife women and older adults. It was a brief self-report measure that focused on positive aspects of well-being rather than diagnosing a mental disorder. The instrument consisted of five items addressing positive mood, calmness, energy, restorative sleep, and interest in daily life over the specified reference period. **Scoring:** Each item was scored from 0 to 5, producing a raw total ranging from 0

to 25. The raw total was multiplied by four to produce a standardized score ranging from 0 to 100. Higher scores indicated better reported well-being.

Interpretation: The principal outcome was the change in the standardized WHO-5 score from baseline to immediately after the intervention. A greater increase in the intervention group indicated greater improvement in reported well-being when supported by the statistical analysis.

Tool IV: Connor–Davidson Resilience Scale—10-item version (CD-RISC-10)

The CD-RISC-10 was used to measure psychological resilience among older adults. It assessed perceived capacity to adapt to challenges and recover from stressful circumstances. The 10-item version was developed through psychometric refinement of the original Connor–Davidson Resilience Scale **(Campbell-Sills & Stein, 2007).**

Scoring

Each of the 10 items was scored from 0 to 4:

- 0 = Not true at all.
- 1 = Rarely true.
- 2 = Sometimes true.
- 3 = Often true.
- 4 = True nearly all the time.

The total score ranged from 0 to 40. Higher scores indicated greater reported resilience. The total score was analyzed as a continuous variable. Arbitrary categories such as low, moderate, and high resilience were not introduced without an appropriate validated basis.

Interpretation: Improvement was reflected by an increase in the total resilience score between baseline and follow-up. The between-group difference was estimated using a statistical model that accounted for family-level clustering.

Tool V: Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS was used to assess perceived social support from family, friends, and a significant other. The family-support domain was particularly relevant because the intervention aimed to strengthen communication and supportive relationships across generations **(Dahlem et al., 1988).**

Domains

1. Family support.
2. Friends' support.
3. Significant-other support.

Scoring : The scale contained 12 items, with four items in each domain. Responses were scored on a seven-point scale ranging from 1 to 7. The total score ranged from 12 to 84. A domain mean was calculated by summing its four item scores and dividing by four. The overall mean was calculated by summing all 12 item scores and dividing by 12. Higher scores indicated greater perceived social support.

Interpretation: Changes in the family-support domain were of particular interest. The total MSPSS score was also analyzed as a secondary outcome.

Tool VI: Walsh Family Resilience Questionnaire (WFRQ)

Family resilience was assessed using the Walsh Family Resilience Questionnaire (WFRQ-32), developed by Froma **Walsh (2016)**, based on her family resilience framework. The questionnaire consisted of 32 items distributed across three main domains: family belief systems (13 items), family organizational processes (9 items), and communication and problem-solving processes (10

items). These domains covered nine subdomains, including meaning-making, positive outlook, transcendence and spirituality, flexibility, connectedness, mobilization of social and economic resources, clarity, open emotional sharing, and collaborative problem-solving. Each item was rated on a five-point Likert scale ranging from 1 (rarely/never) to 5 (almost always), with no reverse-scored items. The total score ranged from 32 to 160, with higher scores indicating greater family resilience. Domain scores were calculated by summing the corresponding item scores. An additional open-ended question explored other factors that helped families overcome stressful situations and was not included in the quantitative scoring. The questionnaire was administered to the designated family respondent, and scores were analyzed as continuous variables, with higher follow-up scores indicating improvement in family resilience (**Walsh, 2016; Morais et al., 2024).**

Tool VII: Healthy-Aging Assessment Form

A structured healthy-aging assessment form was used to evaluate relevant health and functional indicators among older adults. The form was developed by the researchers according to the study objectives and aligned with the person-centered principles of the World Health Organization's Integrated Care for Older People (ICOPE) framework **(WHO, 2017, 2025)**. It covered seven assessment domains: mobility and physical functioning, including difficulties with walking, transferring, and performing daily activities; nutrition and vitality, including nutritional concerns and appetite difficulties; sensory functioning, including self-reported hearing and vision difficulties; psychological well-being, assessed using the WHO-5 Well-Being Index; social participation, including involvement in family and community activities; health management, including medication-management difficulties, access to healthcare services, and follow-up needs; and functional independence, assessed through the ability to perform selected activities of daily living using an appropriate validated instrument when applicable. The collected data were used to identify individual health needs, functional limitations, and areas requiring nursing intervention. Each domain was evaluated according to its specified assessment criteria, and validated instruments were scored according to their respective scoring guidelines.

Interpretation: Healthy-aging outcomes were reported by domain, with changes between baseline and follow-up.

Validity and reliability

Validity

The researcher-developed sociodemographic and clinical questionnaire, family assessment items, and researcher-developed components of the healthy-aging form were submitted to a panel of experts in maternity nursing, gerontological nursing, community health nursing, and mental health nursing. The experts evaluated relevance, clarity, comprehensiveness, cultural appropriateness, and consistency with the study objectives. Their feedback was documented, and items were revised where necessary.

Reliability

Internal consistency was assessed using Cronbach's alpha coefficients calculated from the study data (N = 240). For midlife women's outcomes, the Menopause Rating Scale (MRS) and WHO-5 Well-Being Index demonstrated internal consistency coefficients of 0.84 and 0.87, respectively. Regarding the older adults' instruments, the 10-item Connor–Davidson Resilience Scale (CD-RISC-10) yielded an alpha coefficient of 0.82, while the healthy-aging subscales ranged from 0.79 to 0.85. Furthermore, the family-related measures, including the Multidimensional Scale of Perceived Social Support (MSPSS) and the selected family-resilience instrument, exhibited reliability coefficients of 0.89 and 0.91, respectively. The WFRQ reliability coefficient of 0.91.

Pilot study

A pilot study was conducted on 24 participants (10% of the total study sample), comprising 12 midlife women and 12 older adults from the same family units. The pilot study aimed to assess the clarity, comprehensibility, and cultural appropriateness of the interview questions, determine the time required to complete each assessment tool, and evaluate the feasibility of recruiting family dyads. It also examined the acceptability and practical feasibility of the clinical education sessions, home visits, coordinated family activities, and proposed intervention schedule. Potential challenges related to cross-generational data collection, participant coordination, and completion of assessment forms were identified and documented. The completeness and consistency of the collected data were also reviewed. Based on the pilot findings, necessary modifications were made to the

data collection procedures, intervention arrangements, and administrative forms. The 24 participants involved in the pilot study were excluded from the main study sample.

Ethical considerations

Prior to participant recruitment, ethical approval was obtained from the appropriate institutional research ethics committee, faculty of nursing (NO; 178/2024) and official administrative permissions were secured from the relevant hospital authorities. Each eligible participant received a clear explanation of the study's purpose, procedures, expected time commitment, potential benefits, and possible inconveniences. Participation was entirely voluntary, and written informed consent was obtained separately from each midlife woman and older adult within the participating family units. The consent of one family member was not considered a substitute for that of another. Participants were informed of their right to refuse participation, decline to answer any specific question, or withdraw from the study at any time without any adverse consequences for their routine healthcare. Confidentiality and privacy were maintained throughout the study by assigning unique identification codes to participants' records and storing identifying information securely and separately from the research dataset. Access to identifiable information was restricted to authorized research personnel. Furthermore, home visits and family activities were conducted with respect for individual privacy, personal preferences, and household circumstances. The research team ensured that no participant was pressured to disclose sensitive information or engage in activities that caused discomfort.

Intervention program

The structured, family-centered intervention program spanned a total duration of 12 weeks. It integrated clinic-based education, individualized support for older adults, coordinated family activities, and scheduled home visits. To promote consistency and intervention fidelity, the program was delivered according to a standardized written manual. The intervention provider documented attendance, completion of planned activities, clinical referrals, and any deviations from the protocol.

Phase I: Preparation and baseline assessment

Before delivering the intervention, the researcher identified eligible family units, obtained informed consent, and collected comprehensive baseline data. This phase involved assessing the specific needs of both participating midlife women and older adults.

Based on the assessment findings, individualized goals were developed. For older adults, these goals addressed safe physical activity, medication-management support, nutrition, mobility, and follow-up care. For midlife women, goals targeted menopause-related symptom management, sleep hygiene, stress management, and appropriate healthcare-seeking behaviors.

Phase II: Clinic-based educational and support sessions

The educational component was delivered through eight scheduled sessions over the 12-week period.

Session	Timing	Target participants	Main content	Duration
1	Week 1	Midlife women	Menopausal transition, symptom recognition, self-care, and clinical assessment indicators	60 minutes
2	Week 2	Midlife women	Sleep, physical activity, nutrition, stress management, and healthy lifestyle practices	60 minutes
3	Week 3	Older adults	Healthy aging, chronic-condition self-management, nutrition, mobility, and safety	60 minutes
4	Week 4	Older adults	Medication-management support, healthcare access, prevention, and functional independence	60 minutes
5	Week 5	Midlife women and older adults	Cross-generational communication, mutual support, and family problem-solving	60–75 minutes

Session	Timing	Target participants	Main content	Duration
6	Week 6	Midlife women and older adults	Practical goal-setting, stress-management skills, and shared family health planning	60–75 minutes
7	Week 8	Midlife women and older adults	Review of individual goals, barriers to self-care, and reinforcement of healthy practices	45–60 minutes
8	Week 10	Midlife women and older adults	Progress review, reinforcement of family support, and preparation for continued self-management	45–60 minutes

Phase III: Home visits

Scheduled home visits were conducted throughout the 12-week intervention period to reinforce clinic-based concepts. These visits were tailored to the specific needs, preferences, and household circumstances of each participating family.

During each home visit, the nurse systematically performed the following actions:

1. Reviewed progress toward previously established individual health goals.
2. Reinforced relevant information and core concepts from the clinic sessions.
3. Assessed and addressed practical barriers to implementing recommended lifestyle practices.
4. Encouraged safe, age-appropriate participation in physical and social activities.
5. Supported positive communication and shared problem-solving between the two generations.
6. Identified emerging clinical problems requiring formal referral to healthcare professionals.
7. Documented completed activities, referrals made, and specific participant responses.

Phase IV: Follow-up and outcome assessment

Immediately following completion of the 12-week program, all participants were reassessed using the same assessment tools administered at baseline. This post-intervention evaluation measured menopausal symptom severity and psychological well-being among midlife women, psychological resilience among older adults, perceived social support, family resilience, and the prespecified healthy-aging indicators.

Statistical analysis

Statistical data were analyzed using IBM SPSS Statistics, version 28.0. Continuous variables were summarized as means and standard deviations, whereas categorical variables were presented as frequencies and percentages. Baseline characteristics were described to assess the distribution of participant characteristics across study groups. Pearson's chi-square test was used for categorical comparisons where appropriate. Within-group longitudinal changes in menopausal symptom severity classifications were evaluated using the marginal-homogeneity test. To evaluate the intervention effect while accounting for family clustering, a cluster-adjusted ordinal model was used for categorical changes, and linear mixed-effects models were utilized for continuous outcomes, including psychological well-being, resilience, perceived support, and healthy-aging indicators. Adjusted group-by-time effects and 95% confidence intervals were calculated. Cluster-adjusted correlation coefficients were calculated to examine statistical associations between family-related outcomes and individual health parameters. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1. Distribution of participants according to their baseline sociodemographic and clinical characteristics (n = 240)

Characteristics	Intervention group (n = 120) No. (%)	Control group (n = 120) No. (%)	Test statistic	p-value
I. Sociodemographic characteristics				
A. Midlife women's characteristics (n = 60/group)				
Age (years)			$\chi^2 = 0.14$	0.987
40–44	12 (20.0)	13 (21.7)		
45–49	20 (33.3)	19 (31.7)		
50–54	18 (30.0)	17 (28.3)		
55–59	10 (16.7)	11 (18.3)		
Educational level			$\chi^2 = 0.20$	0.906
Illiterate/read and write	18 (30.0)	20 (33.3)		
Basic/intermediate	25 (41.7)	23 (38.3)		
University education	17 (28.3)	17 (28.3)		
Marital status			$\chi^2 = 0.18$*	0.914*
Married	48 (80.0)	47 (78.3)		
Widowed	9 (15.0)	10 (16.7)		
Divorced/separated	3 (5.0)	3 (5.0)		
Employment status			$\chi^2 = 0.16$*	0.923*
Employed	17 (28.3)	18 (30.0)		
Unemployed/housewife	43 (71.7)	42 (70.0)		
Residence			$\chi^2 = 0.13$*	0.718*
Rural	39 (65.0)	40 (66.7)		
Urban	21 (35.0)	20 (33.3)		
B. Older adults' characteristics (n = 60/group)				
Age (years)			$\chi^2 = 0.24$	0.888
60–69	30 (50.0)	32 (53.3)		
70–79	22 (36.7)	20 (33.3)		
≥80	8 (13.3)	8 (13.3)		
Sex			$\chi^2 = 0.13$*	0.718*
Male	28 (46.7)	30 (50.0)		
Female	32 (53.3)	30 (50.0)		
Educational level			$\chi^2 = 0.20$*	0.906*
Illiterate/read and write	26 (43.3)	27 (45.0)		
Basic/intermediate	23 (38.3)	22 (36.7)		

Characteristics	Intervention group (n = 120) No. (%)	Control group (n = 120) No. (%)	Test statistic	p-value
University education	11 (18.3)	11 (18.3)		
Marital status			$\chi^2 = 0.17$*	0.918*
Married	35 (58.3)	34 (56.7)		
Widowed	22 (36.7)	23 (38.3)		
Divorced/separated	3 (5.0)	3 (5.0)		
II. Clinical characteristics				
A. Midlife women's clinical characteristics				
Menopausal status			$\chi^2 = 0.19$*	0.909*
Premenopause	8 (13.3)	9 (15.0)		
Perimenopause	19 (31.7)	18 (30.0)		
Postmenopause	33 (55.0)	33 (55.0)		
Previous menopause-related consultation			$\chi^2 = 0.13$*	0.718*
Yes	24 (40.0)	26 (43.3)		
No	36 (60.0)	34 (56.7)		
Current menopause-related treatment			$\chi^2 = 0.14$*	0.710*
Yes	15 (25.0)	16 (26.7)		
No	45 (75.0)	44 (73.3)		
Chronic illnesses			$\chi^2 = 0.13$*	0.718*
Yes	22 (36.7)	24 (40.0)		
No	38 (63.3)	36 (60.0)		
Regular medication use			$\chi^2 = 0.14$*	0.710*
Yes	20 (33.3)	21 (35.0)		
No	40 (66.7)	39 (65.0)		
Physical activity			$\chi^2 = 0.14$*	0.710*
Regular	18 (30.0)	17 (28.3)		
Irregular/none	42 (70.0)	43 (71.7)		
Previous health education			$\chi^2 = 0.14$*	0.710*
Yes	21 (35.0)	20 (33.3)		
No	39 (65.0)	40 (66.7)		
B. Older adults' clinical characteristics				
Chronic illness status			$\chi^2 = 0.24$	0.886
No chronic illness	15 (25.0)	17 (28.3)		
One chronic illness	25 (41.7)	24 (40.0)		
Two or more chronic illnesses	20 (33.3)	19 (31.7)		
Current medication use			$\chi^2 = 0.14$*	0.710*
Yes	43 (71.7)	42 (70.0)		

Characteristics	Intervention group (n = 120) No. (%)	Control group (n = 120) No. (%)	Test statistic	p-value
No	17 (28.3)	18 (30.0)		
Mobility limitations			$\chi^2 = 0.14$*	0.710*
Yes	27 (45.0)	28 (46.7)		
No	33 (55.0)	32 (53.3)		
Use of assistive devices			$\chi^2 = 0.13$*	0.718*
Yes	14 (23.3)	15 (25.0)		
No	46 (76.7)	45 (75.0)		
History of recent falls			$\chi^2 = 0.14$*	0.710*
Yes	12 (20.0)	13 (21.7)		
No	48 (80.0)	47 (78.3)		
Sensory difficulties			$\chi^2 = 0.14$*	0.710*
Yes	24 (40.0)	25 (41.7)		
No	36 (60.0)	35 (58.3)		
Nutritional concerns			$\chi^2 = 0.13$*	0.718*
Yes	19 (31.7)	20 (33.3)		
No	41 (68.3)	40 (66.7)		
Healthcare utilization			$\chi^2 = 0.14$*	0.710*
Regular follow-up	35 (58.3)	34 (56.7)		
Irregular follow-up	25 (41.7)	26 (43.3)		

Table 1 demonstrates the baseline sociodemographic and clinical characteristics of midlife women and older adults in the intervention and control groups. Regarding midlife women, the largest proportion belongs to the 45–49-year age category, representing 33.3% and 31.7% of the intervention and control groups, respectively. Basic/intermediate education constitutes the most frequent educational level in both groups (41.7% and 38.3%, respectively). Most women are married (80.0% and 78.3%), unemployed or housewives (71.7% and 70.0%), and reside in rural areas (65.0% and 66.7%).

Concerning older adults, approximately half of the participants are aged 60–69 years (50.0% and 53.3%), while females represent 53.3% and 50.0% of the respective groups. More than half of older adults are married, accounting for 58.3% and 56.7%. Regarding clinical characteristics, postmenopausal women constitute the largest category (55.0% in both groups). Among older adults, one chronic illness represents the most frequent category (41.7% and 40.0%), followed by two or more chronic illnesses (33.3% and 31.7%). Medication use and mobility limitations are also common among older participants.

Table 2. Distribution of participants according to their baseline family and caregiving characteristics

Family and caregiving characteristics	Intervention group (n = 120) No. (%)	Control group (n = 120) No. (%)	Test statistic	p-value
Household composition			$\chi^2 = 0.14$*	0.710*
Nuclear family	38 (63.3)	37 (61.7)		
Extended family	22 (36.7)	23 (38.3)		
Living arrangement of older adults (n = 60/group)			$\chi^2 = 0.18$*	0.914*
Living alone	8 (13.3)	9 (15.0)		

Family and caregiving characteristics	Intervention group (n = 120) No. (%)	Control group (n = 120) No. (%)	Test statistic	p-value
Living with spouse	18 (30.0)	17 (28.3)		
Living with children/family	34 (56.7)	34 (56.7)		
Relationship of older adults to participating women (n = 60/group)			$\chi^2 = 0.17$*	0.918*
Husband	30 (50.0)	29 (48.3)		
Father/mother	24 (40.0)	25 (41.7)		
Other family member	6 (10.0)	6 (10.0)		
Frequency of family contact			$\chi^2 = 0.14$*	0.934*
Daily	48 (80.0)	47 (78.3)		
Weekly	9 (15.0)	10 (16.7)		
Occasionally	3 (5.0)	3 (5.0)		
Family involvement in healthcare			$\chi^2 = 0.17$*	0.918*
High involvement	25 (41.7)	24 (40.0)		
Moderate involvement	22 (36.7)	23 (38.3)		
Low involvement	13 (21.7)	13 (21.7)		
Caregiving responsibilities			$\chi^2 = 0.14$*	0.710*
Yes	42 (70.0)	41 (68.3)		
No	18 (30.0)	19 (31.7)		
Perceived caregiving burden			$\chi^2 = 0.19$*	0.909*
Low	17 (28.3)	18 (30.0)		
Moderate	27 (45.0)	26 (43.3)		
High	16 (26.7)	16 (26.7)		
Availability of assistance with daily activities			$\chi^2 = 0.14$*	0.710*
Available	36 (60.0)	35 (58.3)		
Partially available	17 (28.3)	18 (30.0)		
Not available	7 (11.7)	7 (11.7)		
Availability of family support			$\chi^2 = 0.17$*	0.918*
Adequate	28 (46.7)	27 (45.0)		
Moderate	21 (35.0)	22 (36.7)		
Inadequate	11 (18.3)	11 (18.3)		

Table 2 presents the baseline family and caregiving characteristics of participants in the intervention and control groups. Regarding household composition, nuclear families represent the majority in both groups (63.3% and 61.7%, respectively). More than half of older adults live with their children or other family members (56.7% in both groups), whereas approximately one-third live with their spouses. Daily family contact represents the most common pattern, accounting for 80.0% of the intervention group and 78.3% of the control group. This finding reflects frequent intergenerational interaction within the participating families. Regarding healthcare involvement, high family involvement is reported by 41.7% and 40.0% of participants, respectively.

Concerning caregiving responsibilities, approximately seven out of ten participants report having caregiving responsibilities. Moderate caregiving burden represents the most frequent category in both groups (45.0% and 43.3%). Furthermore, assistance with daily activities is available for 60.0% of the intervention group and 58.3% of the control group. Adequate family support is reported by 46.7% and 45.0%, respectively.

Table 3. Comparison of menopausal symptom severity among midlife women before and after the intervention (n = 120)

Menopausal symptom severity	Intervention before No. (%)	Intervention after No. (%)	Control before No. (%)	Control after No. (%)
Mild	8 (13.3)	24 (40.0)	9 (15.0)	11 (18.3)
Moderate	20 (33.3)	25 (41.7)	19 (31.7)	20 (33.3)
Severe	22 (36.7)	9 (15.0)	23 (38.3)	21 (35.0)
Very severe	10 (16.7)	2 (3.3)	9 (15.0)	8 (13.3)
Total	60 (100.0)	60 (100.0)	60 (100.0)	60 (100.0)

Statistical analysis

Comparison	Statistical test	Test statistic	p-value
Intervention group: before versus after	Marginal-homogeneity test	$\chi^2 = 22.40$	<0.001
Control group: before versus after	Marginal-homogeneity test	$\chi^2 = 2.10$	0.552
Difference in change between groups	Cluster-adjusted ordinal model	—	<0.001

Table 3 shows a significant shift toward lower menopausal symptom severity in the intervention group. The proportion of women with mild symptoms increases from 13.3% before the intervention to 40.0% afterward, while the proportion with very severe symptoms decreases from 16.7% to 3.3%. Severe symptoms also decline from 36.7% to 15.0%. In contrast, the control group demonstrates relatively limited changes across the symptom categories. The marginal-homogeneity test confirms a statistically significant within-group change in the intervention group ($\chi^2 = 22.40$, $p < 0.001$), whereas the control group shows no statistically significant change ($\chi^2 = 2.10$, $p = 0.552$). The cluster-adjusted ordinal model also demonstrates a significant difference in change between the two groups ($p < 0.001$), favoring the intervention.

Table 4. Comparison of psychological well-being among midlife women and older adults

Participant group and assessment	Intervention group Mean ± SD	Control group Mean ± SD
Midlife women		
Before intervention	42.6 ± 12.1	43.1 ± 11.8
After intervention	68.4 ± 11.2	46.0 ± 12.0
Older adults		
Before intervention	45.2 ± 11.4	44.7 ± 11.7
After intervention	65.1 ± 10.8	47.0 ± 11.5

Inferential analysis

Outcome	Adjusted group-by-time effect	95% CI	p-value
WHO-5 among midlife women	+22.9 points	18.0 to 27.8	<0.001
WHO-5 among older adults	+17.6 points	12.8 to 22.4	<0.001

Table 4 demonstrates a significant improvement in psychological well-being in both intervention subgroups. Among midlife women, the mean WHO-5 score increases from 42.6 ± 12.1 before the intervention to 68.4 ± 11.2 afterward, compared with a smaller increase from 43.1 ± 11.8 to 46.0 ± 12.0 in the control group. Similarly, older adults in the intervention group show an increase from 45.2 ± 11.4 to 65.1 ± 10.8, whereas the control group demonstrates a more limited change from 44.7 ± 11.7 to 47.0 ± 11.5. The adjusted group-by-time effects are statistically significant for both midlife women (+22.9 points, $p < 0.001$) and older adults (+17.6 points, $p < 0.001$).

Table 5. Comparison of psychological resilience among older adults before and after the intervention

Assessment	Intervention group Mean ± SD	Control group Mean ± SD
Before intervention	20.8 ± 5.2	21.1 ± 5.0
After intervention	30.6 ± 4.7	22.3 ± 5.1
Mean change	+9.8	+1.2

Inferential analysis

Comparison	Result	95% CI	p-value
Within-group change: intervention	+9.8 points	8.2 to 11.4	<0.001
Within-group change: control	+1.2 points	0.2 to 2.2	0.020
Adjusted between-group difference in change	+8.6 points	6.5 to 10.7	<0.001

Table 5 highlights a marked improvement in psychological resilience among older adults receiving the intervention. The mean CD-RISC-10 score increases from 20.8 ± 5.2 at baseline to 30.6 ± 4.7 after the intervention, representing a mean improvement of 9.8 points ($p < 0.001$). Although the control group also demonstrates a small increase from 21.1 ± 5.0 to 22.3 ± 5.1 ($p = 0.020$), the adjusted between-group difference in change reaches 8.6 points (95% CI: 6.5–10.7, $p < 0.001$).

Table 6. Comparison of perceived family support before and after the intervention

Assessment	Intervention group Mean ± SD	Control group Mean ± SD
Total MSPSS score		
Before intervention	48.5 ± 8.6	49.0 ± 8.4
After intervention	65.2 ± 7.9	50.8 ± 8.3
Family-support domain mean		
Before intervention	4.1 ± 1.0	4.2 ± 0.9
After intervention	5.8 ± 0.8	4.3 ± 0.9

Inferential analysis

Outcome	Adjusted group-by-time effect	95% CI	p-value
Total MSPSS score	+14.9 points	11.5 to 18.3	<0.001
Family-support domain mean	+1.6 points	1.2 to 2.0	<0.001

Table 6 demonstrates a clear improvement in perceived social support among participants receiving the integrated nursing intervention. The total MSPSS score increases from 48.5 ± 8.6 to 65.2 ± 7.9 in the intervention group, compared with a smaller increase from 49.0 ± 8.4 to 50.8 ± 8.3 in the control group. The family-support domain also increases from 4.1 ± 1.0 to 5.8 ± 0.8, whereas the control group shows only a slight change from 4.2 ± 0.9 to 4.3 ± 0.9. The adjusted group-by-time effects are statistically significant for both the total MSPSS score (+14.9 points, $p < 0.001$) and the family-support domain (+1.6 points, $p < 0.001$).

Table 7. Comparison of family resilience before and after the intervention

Assessment	Intervention group Mean ± SD	Control group Mean ± SD
Before intervention	54.3 ± 9.1	55.0 ± 8.8
After intervention	72.6 ± 8.4	56.8 ± 8.9
Mean change	+18.3	+1.8

Inferential analysis

Comparison	Result	95% CI	p-value
Within-group change: intervention	+18.3 points	15.7 to 20.9	<0.001
Within-group change: control	+1.8 points	0.1 to 3.5	0.039
Adjusted between-group difference in change	+16.5 points	13.1 to 19.9	<0.001

Table 7 demonstrates a substantial improvement in family resilience following the clinic-to-home integrated nursing intervention. The intervention group shows an increase in the mean score from 54.3 ± 9.1 before the intervention to 72.6 ± 8.4 afterward, representing a mean change of 18.3 points ($p < 0.001$). In comparison, the control group demonstrates a smaller increase from 55.0 ± 8.8 to 56.8 ± 8.9 ($p = 0.039$). The adjusted between-group difference in change reaches 16.5 points (95% CI: 13.1–19.9, $p < 0.001$).

Table 8. Comparison of healthy-aging indicators among older adults before and after the intervention

Healthy-aging indicator	Intervention before Mean ± SD	Intervention after Mean ± SD	Control before Mean ± SD	Control after Mean ± SD
Functional performance score, higher = better	65.4 ± 10.2	76.8 ± 9.1	66.1 ± 10.0	67.5 ± 9.8
Social participation score, higher = better	52.8 ± 11.3	69.5 ± 10.1	53.4 ± 11.0	55.0 ± 10.9
Health-management score, higher = better	58.2 ± 9.8	75.1 ± 8.7	59.0 ± 9.5	61.2 ± 9.4

Inferential analysis

Outcome	Adjusted group-by-time effect	95% CI	p-value
Functional performance	+10.0 points	6.8 to 13.2	<0.001
Social participation	+15.1 points	11.5 to 18.7	<0.001
Health management	+14.7 points	11.4 to 18.0	<0.001

Table 8 presents significant changes across the three healthy-aging indicators among older adults in the intervention group. Functional-performance scores increase from 65.4 ± 10.2 to 76.8 ± 9.1, while social-participation scores increase from 52.8 ± 11.3 to 69.5 ± 10.1. Health-management scores also improve from 58.2 ± 9.8 to 75.1 ± 8.7. In contrast, the control group demonstrates comparatively small changes across the same indicators. The adjusted group-by-time effects show statistically significant improvements in functional performance (+10.0 points), social participation (+15.1 points), and health management (+14.7 points), all at $p < 0.001$.

Table 9. Associations between family-related outcomes and individual health outcomes

Association	Correlation coefficient (r)	p-value
Perceived family support and psychological well-being among midlife women	0.62	<0.001
Family resilience and psychological well-being among midlife women	0.57	<0.001
Perceived family support and psychological resilience among older adults	0.59	<0.001
Family resilience and healthy-aging indicators among older adults	0.54	<0.001

Table 9 demonstrates positive and statistically significant associations between family-related factors and individual health outcomes. Perceived family support shows a positive correlation with psychological well-being among midlife women ($r = 0.62$, $p < 0.001$), while family resilience is also positively correlated with women's psychological well-being ($r = 0.57$, $p < 0.001$). Among older adults, perceived family support is positively associated with psychological resilience ($r = 0.59$, $p < 0.001$), and family resilience is positively associated with healthy-aging indicators ($r = 0.54$, $p < 0.001$).

DISCUSSION

The intersection of women's midlife transitions and healthy aging among older populations represents an important area for contemporary family-centered healthcare interventions. Midlife women frequently encounter physiological and psychological challenges, particularly menopausal symptoms and changes in psychological well-being, while older adults face functional changes and potential reductions in social participation. Individual health outcomes are also influenced by the family environment, where perceived support and family resilience contribute to coping and adaptation. The present study evaluates an integrated clinic-to-home nursing intervention that addresses these interconnected needs through education, individualized nursing support, family activities, and home follow-up.

The findings indicate that the intervention and control groups are comparable in terms of age, educational level, and chronic disease burden at baseline, with no statistically significant differences between the groups. This comparability is important because sociodemographic and clinical characteristics may influence menopausal symptoms, psychological well-being, resilience, and healthy-aging outcomes. The findings are consistent with the updated CONSORT 2025 recommendations by **Hopewell et al. (2025),** which emphasize transparent reporting of baseline demographic and clinical characteristics to facilitate assessment of group comparability and the clinical relevance of trial findings. Furthermore, the absence of statistically significant baseline differences does not independently establish equivalence between groups. Therefore, the magnitude and clinical relevance of baseline imbalances, together with potential family-level clustering, should be carefully considered when interpreting intervention effects. Particular attention should also be given to appropriate analytical methods that account for the correlation between participants belonging to the same family.

The findings demonstrate improvement in menopausal symptom severity among women who received the clinic-to-home integrated nursing intervention. The proportion of women classified as having mild symptoms increases afterward, whereas the proportion with severe symptoms decreases, and those with very severe symptoms decrease . In contrast, the control group shows relatively limited changes. These findings suggest that structured menopause education, individualized nursing guidance, symptom-management strategies, psychological support, and continued follow-up help women understand menopausal changes and develop more effective coping strategies. The findings are consistent with the rapid review conducted by **McFeeters et al. (2024),** which included 39 studies and found evidence that menopause education programs benefit menopause-related knowledge, symptom management, and quality of life. The review also emphasizes the importance of supportive learning environments and comprehensive education addressing symptoms and management options.

Similarly, **Keye et al. (2023)** report improvements in quality of life and symptom control following menopause education in their systematic review and meta-analysis. However, the extent of improvement varies across the included studies, and methodological limitations indicate the need for further research. Thus, the present findings support the value of structured menopause education integrated with ongoing nursing support and family involvement.

The results demonstrate improvement in psychological well-being among both midlife women and older adults in the intervention group. Among women, the mean WHO-5 score increases afterward, compared with a smaller increase in the control group. Similarly, the mean score among older adults increases in the intervention group, whereas the control group shows only modest improvement.

These changes may be related to the combined effects of education, emotional support, stress-management guidance, family participation, and continuity of nursing care between the clinic and home. Recent evidence supports the relevance of social support and psychological resources to older adults' well-being. For example, **Liu et al. (2025),** in a study of 470 older adults, identify positive associations between perceived social support, psychological resilience, and subjective well-being. Their findings indicate that participants reporting stronger social support and resilience also tend to report better well-being. This evidence is consistent with the present findings, particularly the role of family involvement in supporting emotional health. Consequently, their findings support the plausibility of the relationship but do not establish that a clinic-to-home nursing program causes improvements in well-being.

The findings reveal an increase in psychological resilience among older adults who received the intervention. The mean CD-RISC-10 score increases after the intervention, compared with a smaller increase in the control group. The improvement may reflect the contribution of individualized nursing support, problem-solving guidance, encouragement of adaptive coping, and opportunities for older adults to participate in family activities. In multigenerational households, emotional reassurance and practical assistance may help older adults manage health-related challenges while maintaining a sense of belonging and personal value.

These findings are consistent with **Liu et al. (2025),** who report a positive association between psychological resilience and subjective well-being among older adults and identify resilience as a contributor to the relationship between perceived social support and well-being. Their results support the importance of considering social and psychological resources when designing interventions for older populations. The present findings extend this perspective by demonstrating favorable changes following a structured nursing intervention that combines individual support with family engagement.

The findings demonstrate an increase in perceived social support among participants receiving the integrated nursing intervention. The mean total MSPSS score increases in the intervention group, compared with a smaller increase in the control group. The improvement in the family-support domain suggests that the intervention helps participants recognize available support and communicate their needs more effectively.

The inclusion of intergenerational family activities and structured discussions may encourage family members to share responsibilities and provide emotional reassurance. These findings are consistent with **Whear et al. (2023)**, who report positive associations between perceived social support, resilience, and subjective well-being among older adults. In addition, **Lin et al., (2024)** study of multigenerational families examining family resilience and social support among older adults with chronic illness and their primary caregivers highlights the importance of considering support and resilience at the level of both the older adult and the caregiver. However, perceived social support reflects a participant's subjective appraisal of available support and

may not correspond directly to changes in the actual amount of practical assistance received. The present findings therefore highlight the importance of distinguishing perceived support from observable family caregiving behaviors.

The findings demonstrate improvement in family resilience after the clinic-to-home integrated nursing intervention. The intervention group's mean score increases , compared with a smaller increase in the control group. This pattern suggests that involving midlife women and older adults in shared educational and supportive activities encourages communication, collaborative problem-solving, and greater awareness of family members' needs. These processes are particularly relevant in multigenerational families, where health-related demands affecting one person can influence the daily routines and emotional experiences of other family members.

A study by **Yang et al., (2026)** examining family resilience and social support together when considering quality of life among older adults with chronic illness and their caregivers. The study's focus on dyadic relationships is conceptually consistent with the present intervention's family-centered approach. However, the cited study was cross-sectional and therefore cannot establish that an intervention improves family resilience over time. The present findings highlight the potential value of strengthening family communication, shared decision-making, and collaborative health planning. Interpretation of the numerical family-resilience scores should remain linked to the exact validated questionnaire version and scoring instructions used in the study.

The results demonstrate improvement across the three healthy-aging domains: functional performance, social participation, and health management. Functional-performance scores increased in the intervention group, while social-participation scores increased. Health-management scores also increase. These changes may be associated with individualized education, support for self-management, encouragement of participation in meaningful activities, and home visits that enable nurses to identify practical barriers to healthy living. The findings are consistent with the World Health Organization's second-edition Integrated Care for Older People handbook, published in 2025, which recommends person-centered assessment, identification of declines in intrinsic capacity, assessment of social support needs, individualized care planning, and follow-up in primary and community care. The framework emphasizes that healthy aging requires attention to physical, psychological, and social functioning rather than focusing exclusively on disease management. The present findings are therefore consistent with the principles of integrated care, particularly the importance of linking clinical assessment with individualized support and follow-up in the home environment.

The correlation analysis reveals positive associations between perceived family support, family resilience, psychological well-being, and healthy-aging indicators. Perceived family support is positively correlated with women's well-being, while family resilience is positively correlated with women's well-being. Among older adults, perceived family support is positively correlated with psychological resilience, and family resilience is positively correlated with healthy-aging indicators.

These patterns indicate that supportive family relationships and adaptive family functioning are associated with emotional well-being and healthy aging. The findings are consistent with **Huang et al. (2025),** who identify positive associations between perceived social support, psychological resilience, and subjective well-being among older adults. Their study also suggests that psychological resilience partially mediates the relationship between perceived social support and well-being. In addition, the study by **Xu et a., (2024)** examines the relationship of family resilience and social support to quality of life among older adults with chronic illness and their caregivers, further supporting the importance of studying these factors within family systems.

Overall, the findings demonstrate favorable changes following the clinic-to-home integrated nursing intervention across the main individual and family-related outcomes. By combining menopause education, individualized healthy-aging support, psychological coping strategies, family activities, and home follow-up, the intervention addresses individual needs while recognizing the family context in which health behaviors occur. The findings are broadly consistent with **McFeeters et al. (2024)**, who identify evidence supporting menopause education programs for improving women's knowledge, symptom management, and quality of life. They are also consistent with **Sumi et al., (2025)** WHO ICOPE handbook, which emphasizes person-centered assessment, individualized care planning, and monitoring of health and social support needs in community and primary-care settings **(World Health Organization, 2025).** Recent observational evidence from **Liu et al. (2025)** further supports the relevance of perceived social support and resilience to older adults' well-being.

The present study contributes to this literature by evaluating an integrated approach that connects clinic-based nursing care with home follow-up and intergenerational family participation. The findings support the value of considering women's midlife

health and older adults' healthy-aging needs within the same family context. Continued evaluation in other clinical settings and over longer follow-up periods is warranted to assess the sustainability and generalizability of these improvements.

CONCLUSION

Based on the findings of the present study, the study concluded that Clinic-to-Home Integrated Nursing Intervention demonstrated favorable effects on menopausal symptom severity, psychological well-being, psychological resilience, perceived social support, family resilience, and healthy-aging indicators among participants in multigenerational families. The integration of clinic-based education, individualized support for older adults, family activities, and home follow-up provided a structured approach to addressing the distinct but interconnected health needs of midlife women and older adults. The findings also highlighted positive associations between perceived family support, family resilience, psychological well-being, and healthy-aging outcomes. These results support the importance of incorporating family-centered nursing strategies into continuous care for women during midlife and older adults. The intervention therefore offers a promising approach for strengthening individual and family resources and promoting health across generations.

Recommendations

Based on the findings of the present study, the following recommendations are proposed to :

1. **Integrate menopause education into nursing care:** Provide individualized education on menopausal symptoms, self-care, healthy lifestyle practices, and appropriate clinical assessment.
2. **Strengthen support for older adults:** Include individualized assessment of functional needs, health-management challenges, social participation, and opportunities to maintain independence.
3. **Promote family-centered care:** Encourage appropriate communication and shared health planning among family members while respecting individual preferences and autonomy.
4. **Use home follow-up where feasible:** Incorporate home visits to reinforce health education and identify practical barriers to self-care.
5. **Develop staff training:** Prepare nurses to deliver menopause education, support healthy aging, facilitate family communication, and identify conditions requiring referral.
6. **Evaluate outcomes systematically:** Use valid instruments, prespecified outcomes, appropriate statistical methods, and transparent reporting of effect sizes and confidence intervals.
7. **Conduct further research:** Undertake studies with longer follow-up, larger samples, and multiple settings to assess the sustainability and generalizability of the observed effects.
8. **Strengthen intergenerational nursing services:** Encourage nursing programs that address the shared health needs of midlife women and older adults within multigenerational families.

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