

Effectiveness of a Health Awareness Program on Menopause-Related Knowledge among Women in Dahod City, Gujarat: A Pre-Experimental One-Group Pretest-Posttest Study

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Abstract

Background: Menopause is a universal midlife transition, yet many women reach this stage with limited preparation and incomplete knowledge about symptoms, self-care, long-term health considerations, and indications for professional consultation. This study evaluated a structured community-based Health Awareness Program designed to improve menopause-related knowledge among women in Dahod City, Gujarat, India.

Methods: A quantitative evaluative approach with a pre-experimental one-group pretest-posttest design was used. One hundred women were recruited from selected community areas by non-probability purposive sampling. Knowledge was assessed using a researcher-developed 30-item structured questionnaire (score 0-30; poor 0-10, average 11-20, good 21-30) with good internal consistency (KR-20 = 0.84). The 45-60-minute intervention used lecture-cum-discussion, explanation, question-answer methods, and visual/written teaching aids in Gujarati/Hindi as appropriate. The posttest was conducted seven days after the intervention. Descriptive statistics, paired t testing, and chi-square tests were used.

Results: Before the intervention, 52% of participants had poor knowledge, 40% had average knowledge, and 8% had good knowledge. At posttest, 72% had good knowledge, 24% average knowledge, and 4% poor knowledge. Mean knowledge increased from 11.42 ± 3.68 to 23.86 ± 2.94 , a mean gain of 12.44 points (paired $t = 36.90$, $df = 99$, $p < 0.001$). Baseline knowledge was significantly associated with educational status ($p = 0.016$), monthly family income ($p = 0.039$), menstrual status ($p = 0.014$), and previous menopause-related information ($p = 0.003$).

Conclusion: The Health Awareness Program produced a large short-term improvement in menopause-related knowledge. Nurse-led, culturally appropriate community education may be a feasible strategy for strengthening menopause health literacy. Controlled studies with longer follow-up are needed to determine retention and effects on health behavior and quality of life.

1. Introduction

Menopause is a natural physiological transition characterized by permanent cessation of menstruation following loss of ovarian follicular activity. The World Health Organization recognizes natural menopause retrospectively after 12 consecutive months of amenorrhea without another evident physiological or pathological cause, with most women experiencing it between 45 and 55 years of age [1]. Because women are living longer, a substantial proportion of the female life course is now spent after menopause, making midlife health literacy, symptom recognition, preventive care, and appropriate help-seeking increasingly important.

The Indian context warrants particular attention. A systematic review estimated the average age at natural menopause in India at approximately 46.6 years [2],

suggesting that many women may spend three decades or more in postmenopausal life. Regional evidence from Central Gujarat has documented a substantial burden of fatigue, sleep problems, hot flushes, body aches, urinary symptoms, and joint pain among women in the menopausal age range [3]. These symptoms can affect daily functioning and quality of life, but their meaning and management may be shaped by educational, socioeconomic, cultural, and healthcare-access factors.

Knowledge is a modifiable determinant of preparedness for the menopausal transition. Surveys have repeatedly shown that women often reach midlife without adequate prior education. Harper et al. reported that many perimenopausal women felt poorly informed and had received little formal menopause education [4]. Munn et

al. similarly found substantial knowledge deficits among women younger than 40 years and recommended that education begin before symptoms appear [5]. In women over 40, Tariq et al. demonstrated that knowledge and attitudes differ across menopausal stages and that women frequently rely on websites, peers, and other informal channels for information [6].

Structured education is therefore a practical nursing intervention. Community-based teaching can clarify the meaning of menopause, common symptoms, healthy lifestyle measures, bone and cardiometabolic health, symptom-management options, myths, and indications for professional consultation. Recent intervention evidence suggests that health education can improve menopause-related knowledge and attitudes [9,10]. However, locally generated evidence from Dahod City is limited, and educational interventions require evaluation within the cultural and health-literacy context in which they are delivered.

The present study evaluated the effectiveness of a structured Health Awareness Program in improving menopause-related knowledge among women in Dahod City, Gujarat. The primary objective was to compare pretest and posttest knowledge. A secondary objective was to examine associations between baseline knowledge and selected socio-demographic and menopause-related characteristics. The manuscript focuses on the knowledge outcome because complete numerical data for the belief outcome planned in the parent dissertation were not available in the final analysis dataset presented in the dissertation.

2. Methods

2.1 Study design and setting

A quantitative evaluative approach with a pre-experimental one-group pretest-posttest design was adopted. A single group of women completed a baseline assessment, received the Health Awareness Program, and completed a posttest seven days later. There was no control group. The study was conducted in selected community areas of Dahod City, Gujarat, India, where a suitable setting was arranged to permit private data collection and delivery of the educational session.

2.2 Participants and sampling

The accessible population comprised eligible women residing in selected community areas of Dahod City during the data-collection period. A final sample of 100 women was recruited using non-probability purposive

sampling. Eligible participants were residents of the selected community areas, belonged to the age range specified in the approved protocol, were available during data collection, could understand the language used for the study materials (Gujarati and/or Hindi), voluntarily provided written informed consent, and were willing to participate in both assessments. Women were excluded if serious acute illness prevented participation, communication or completion of the tools could not be ensured, they had very recent exposure to a similar structured menopause education program when considered a potential confounder, or they withdrew or were unavailable for posttest.

Knowledge measure

Menopause-related knowledge was measured using a researcher-developed 30-item structured multiple-choice questionnaire. The items covered the concept and meaning of menopause, physiological changes, signs and symptoms, physical and psychological manifestations, common health concerns, nutrition, exercise and lifestyle modification, prevention of complications, symptom management, and appropriate health-seeking.

Each correct response received one point, yielding a total score from 0 to 30. Scores were categorized as poor (0-10), average (11-20), or good (21-30) knowledge.

Content validity of the socio-demographic proforma, knowledge questionnaire, and educational intervention was established through review by experts from relevant nursing, clinical, education, and research/statistics disciplines. Suggested modifications were incorporated before finalization. Where required, materials were translated and back-translated to support conceptual and linguistic equivalence. Internal consistency of the knowledge questionnaire was good ($KR-20 = 0.84$). A pilot study involving approximately 10% of the planned main sample was conducted in a separate setting; pilot participants were not included in the final sample, and no major feasibility problems were reported.

2.4 Health Awareness Program

The Health Awareness Program was developed from the study objectives, relevant literature, identified learning needs, and expert suggestions. It covered the definition and stages of menopause, physiological and hormonal changes, common vasomotor, physical, psychological, urogenital and sexual symptoms, longer-term health considerations, symptom-management principles, balanced nutrition, exercise, lifestyle modification, preventive health practices, myths and misconceptions,

and the importance of timely professional consultation. The program was delivered over approximately 45-60 minutes using lecture-cum-discussion, explanation, and question-answer methods. Teaching aids included a PowerPoint presentation, charts, flash cards, posters, pictures, and an information booklet. Gujarati or Hindi was used as appropriate to participant needs. Participants were encouraged to ask questions, and key messages were reinforced at the end of the session.

2.5 Data-collection procedure

After administrative and ethics approvals, eligible women were approached in the selected community areas. The study purpose, procedures, voluntary nature of participation, confidentiality protections, anticipated benefits, and right to withdraw were explained, and written informed consent was obtained. Socio-demographic information and baseline knowledge were then collected. The Health Awareness Program was administered immediately after the pretest according to the validated teaching plan. A posttest using the same knowledge instrument was conducted after seven days. Completed forms were checked for completeness, coded using participant identifiers, and stored for statistical analysis.

2.6 Ethical considerations

The dissertation reports that the study was reviewed and approved by the Parul University Institutional Ethics Committee for Human Research (PU-IECHR), with the identifier recorded as ECR/702/Inst/GJ/2015/RR-21/9920. Administrative permission was obtained from

the relevant study authorities. Written informed consent was obtained from each participant. Privacy, confidentiality, voluntary participation, and the right to withdraw without penalty were maintained throughout the study.

2.7 Statistical analysis

Data were summarized using frequencies, percentages, means, and standard deviations. Pretest and posttest knowledge scores were compared using a paired t test, with statistical significance set at $p < 0.05$. Associations between categorized baseline knowledge and selected socio-demographic or menopause-related variables were examined using chi-square tests; Fisher's exact test was planned where expected cell counts were inadequate. Analysis was conducted for 100 participants who completed the study procedures.

3. Results

3.1 Participant characteristics

Among the 100 participants, 28% were aged 45-49 years, 24% were aged 40-44 years, and 20% were aged 50-54 years. Most participants were Hindu (76%) and married (78%). Secondary education was the most common educational level (28%), and 48% were housewives. The most frequently reported monthly family income was INR 20,001-40,000 (34%). More than half (56%) resided in urban areas. Menstrual status was postmenopausal in 42%, perimenopausal in 36%, and premenopausal in 22%. Sixty-two percent had previously received information about menopause; internet/social media was the most frequently reported source (26%).

Table 1. Selected socio-demographic and menopause-related characteristics (n = 100)

Characteristic	Category	n (%)
Age	35-39 / 40-44 / 45-49 / 50-54 / ≥ 55	18 / 24 / 28 / 20 / 10
Education	No formal / Primary / Secondary / Higher secondary / Graduate+	10 / 18 / 28 / 24 / 20
Occupation	Housewife / Government / Private / Self-employed	48 / 12 / 20 / 20
Residence	Urban / Semi-urban / Rural	56 / 26 / 18
Menstrual status	Premenopausal / Perimenopausal / Postmenopausal	22 / 36 / 42
Previous menopause information	Yes / No	62 / 38
Source of information	Doctor / Nurse-health worker / TV-radio / Internet-social media / Friends-relatives	20 / 18 / 22 / 26 / 14

3.2 Change in knowledge level

Knowledge improved markedly after the Health Awareness Program. At baseline, 52% of women were in the poor-knowledge category and only 8% had good knowledge. Seven days after the intervention, 72% were in the good-knowledge category and 4% remained in the poor-knowledge category.

Table 2. Distribution of pretest and posttest knowledge levels (n = 100)

Knowledge level	Pretest n (%)	Posttest n (%)
Poor (0-10)	52 (52.0)	4 (4.0)
Average (11-20)	40 (40.0)	24 (24.0)
Good (21-30)	8 (8.0)	72 (72.0)

3.3 Effectiveness of the Health Awareness Program

Mean knowledge increased from 11.42 ± 3.68 at pretest to 23.86 ± 2.94 at posttest, corresponding to a mean improvement of 12.44 points. The paired t test showed that this difference was statistically significant ($t = 36.90$, $df = 99$, $p < 0.001$).

Table 3. Pretest-posttest comparison of menopause-related knowledge (n = 100)

Assessment	Mean	SD	Mean difference	t (df)	p value
Pretest	11.42	3.68			
Posttest	23.86	2.94	12.44	36.90 (99)	<0.001

3.4 Factors associated with baseline knowledge

Baseline knowledge was significantly associated with educational status ($\chi^2 = 18.74$, $df = 8$, $p = 0.016$), monthly family income ($\chi^2 = 16.21$, $df = 8$, $p = 0.039$), menstrual status ($\chi^2 = 12.56$, $df = 4$, $p = 0.014$), and previous information regarding menopause ($\chi^2 = 11.67$, $df = 2$, $p = 0.003$). No statistically significant associations were identified with age, religion, occupation, marital status, place of residence, number of children, age at menopause, type of menopause, hysterectomy history, or source of information.

Table 4. Association of selected variables with baseline knowledge (n = 100)

Variable	χ^2	df	p value
Educational status	18.74	8	0.016*
Monthly family income	16.21	8	0.039*
Menstrual status	12.56	4	0.014*
Previous menopause information	11.67	2	0.003*
Age	8.42	8	0.393
Residence	7.92	4	0.094
Occupation	9.58	6	0.143
Source of information	9.16	8	0.329

* $p < 0.05$.

4. Discussion

This community-based pretest-posttest study found a pronounced short-term improvement in menopause-related knowledge after a structured Health Awareness Program. The proportion of women with good knowledge rose from 8% to 72%, while poor knowledge declined from 52% to 4%. The mean score increased by 12.44 points on a 30-point questionnaire, and the paired

comparison was highly statistically significant. These findings indicate that structured, culturally and linguistically appropriate health education can substantially improve immediate menopause knowledge in a community sample.

The low baseline knowledge is consistent with previous studies reporting limited preparation for menopause. Munn et al. found that more than 80% of women under

40 reported no knowledge or only some knowledge of menopause and advocated earlier education through schools, workplaces, healthcare, and public-health channels [5]. Harper et al. similarly documented that many perimenopausal women felt inadequately informed before symptoms began [4]. Tariq et al. reported persistent knowledge gaps among women over 40 and showed that menopausal stage was associated with differences in knowledge, attitudes, and information-seeking behavior [6]. Together, these studies suggest that menopause education frequently occurs reactively rather than anticipatorily.

The magnitude and direction of the post-intervention improvement are also aligned with educational-intervention literature. Javali et al. reported improved knowledge, attitudes, and practices after health education among women in Karnataka [9]. Randomized educational research has likewise demonstrated improved adaptation and menopause-related outcomes following structured intervention [10]. Although intervention designs, populations, instruments, and follow-up intervals differ, the collective evidence supports the educational responsiveness of menopause health literacy.

The present intervention incorporated several features that may have contributed to its effectiveness: delivery in the participants' preferred language, a focused 45-60-minute session, lecture-cum-discussion rather than passive instruction alone, opportunities for questions, visual teaching materials, and an information booklet. Such multimodal delivery is compatible with adult-learning principles, particularly when participants vary in literacy and prior exposure. The seven-day posttest likely captured recent learning effectively; however, it does not establish long-term retention.

Educational status was significantly associated with baseline knowledge. This is plausible because formal education can influence health literacy, access to written and digital information, and confidence in seeking healthcare information. Indian research has similarly highlighted demographic variation in menopause knowledge and attitudes [8,15]. The finding supports the use of plain language, visuals, interaction, and local-language materials so that menopause education remains accessible to women with different educational backgrounds.

Monthly family income was also associated with baseline knowledge. Socioeconomic circumstances may influence access to healthcare, internet connectivity, educational resources, and opportunities for preventive

counseling. Community-based nurse-led education can partly reduce this access gradient by bringing evidence-informed information directly to women rather than depending on self-initiated specialist consultation.

Menstrual status was significantly associated with baseline knowledge, suggesting that direct experience of the menopausal transition may shape awareness. **Tariq et al.** observed differences in menopause knowledge and attitudes across perimenopausal and postmenopausal groups [6], while Muralikrishna et al. emphasized the need for stage-sensitive education among peri- and postmenopausal women [8]. This supports a life-course approach in which education begins before menopause and is reinforced as symptoms and health priorities change. Previous exposure to menopause-related information showed the strongest association with baseline knowledge among the variables assessed. Notably, internet and social media were the most frequently reported information source in this sample. Digital access can increase reach, but the quality of online information varies considerably. Nurses and public-health services can therefore play a dual role: providing reliable community education and directing women toward trustworthy digital resources. Current guidelines emphasize individualized information, support, healthy lifestyle practices, symptom assessment, and evidence-based management rather than a single uniform approach to menopause [11,12]. From a nursing perspective, the findings support integrating menopause education into community outreach, primary care, women's health clinics, health camps, outpatient services, and routine noncommunicable-disease prevention activities. A brief standardized education package can be delivered with modest resources and may be particularly valuable for women who have had little prior formal menopause education. The intervention should nevertheless be understood as an educational strategy rather than a substitute for individualized clinical assessment, especially for postmenopausal bleeding, severe mood symptoms, significant genitourinary problems, or other concerning complaints.

4.1 Strengths and limitations

A strength of the study was the use of a structured, content-validated 30-item knowledge questionnaire with good internal consistency (KR-20 = 0.84), together with a standardised educational program and complete pretest-posttest assessment of 100 participants. The community setting and use of Gujarati/Hindi increased practical relevance to the local population.

Several limitations must be considered. The one-group pretest-posttest design lacked a control group and randomization, so testing effects, history, maturation, and other time-related influences cannot be excluded. Purposive sampling limits generalizability beyond the selected communities. The seven-day follow-up measured short-term knowledge gain but not retention. Outcomes were educational rather than behavioral or clinical, and the study did not assess whether improved knowledge translated into symptom-management practices, healthcare utilization, quality of life, or long-term preventive behavior. Finally, complete numerical results for the belief outcome in the parent dissertation were not available in the reported analysis; consequently, the present manuscript appropriately restricts conclusions to the fully reported knowledge outcome.

5. Conclusion

A structured Health Awareness Program was associated with a substantial short-term improvement in menopause-related knowledge among women in Dahod City. Knowledge increased significantly after a 45-60-minute, culturally adapted educational intervention, and baseline knowledge varied according to education, family income, menstrual status, and previous menopause-related information. Nurse-led community education may be a feasible approach to strengthening menopause health literacy, particularly when delivered in local languages using interactive and visual methods. Future controlled studies should evaluate longer-term retention and effects on beliefs, health behaviors, symptom management, healthcare-seeking, and quality of life.

Declarations

Ethics approval and consent to participate

Ethics approval was reported from the Parul University Institutional Ethics Committee for Human Research (PU-IECHR); the dissertation records the identifier ECR/702/Inst/GJ/2015/RR-21/9920. Written informed consent was obtained from all participants before enrollment. Participation was voluntary, and confidentiality and the right to withdraw were maintained.

Consent for publication

No personally identifiable participant information is presented in this manuscript.

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Competing interests

The authors declare no any competing interests according to the target journal's policy. No competing-interest information was provided in the dissertation.

Data availability

The data-availability statement should be finalized by the authors according to participant-consent conditions, institutional policy, and the requirements of the selected journal.

Author contributions

Harsha Merawat: Conceptualization, methodology, investigation, data collection, data curation, formal analysis, writing - original draft, and project administration.

Smiral Gameti: Conceptualization, methodology, supervision, validation, interpretation of findings, and writing - review and editing.

Both authors reviewed and approved the final version of the manuscript and agreed to be accountable for the integrity and accuracy of the work.

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