

EXPERIENCES OF WOMEN REGARDING BREAST SELF-EXAMINATION TRAINING USING A BREAST MODEL IN A RURAL SETTING: A QUALITATIVE STUDY

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ABSTRACT:

Background:

Breast cancer continues to pose a significant public health challenge, and teaching BSE through breast models offers an effective, hands-on approach to strengthen early detection practices. This qualitative study investigates the experiences of women who have practiced breast self-examination using a breast model in rural areas.

Methods:

The study commenced with an educational session and hands-on training on breast self-examination (BSE), using a silicone breast model. This study employed a qualitative, exploratory, and descriptive research design to explore the experiences of rural women after practicing breast self-examination (BSE) using a breast model. Purposive sampling was utilised to select 30 women from two chosen rural areas of Tiruvallur District, India. Following practical training, participants engaged in individual interviews utilizing an open-ended, semi-structured guide to facilitate sharing. The recorded interviews were subsequently transcribed and data were analyzed using Braun and Clarke's six-phase thematic analysis framework.

Results

The study identified four themes: Ease of Learning Through Hands-On Practice, Improved Memory and Retention, Ability to Detect and Identify Abnormalities, and Transition from Knowledge to Practice. Among 30 women, most were aged 30–39 years (46.7%) and married (93.3%). The majority had primary or high-school education (53.3%). Two-thirds had two children (73.3%), with the first childbirth between 21–25 years (46.7%) and none had a history of breast cancer.

Conclusion:

Findings revealed that hands-on practice improved understanding, confidence, memory, and the ability to detect abnormalities. Integrating hands-on sessions into breast health education can enable women to take charge of early detection and timely care.

Keywords

Breast self-examination, Breast model, Breast simulator, Women's Perspectives, Early Detection, Hands-on Training, Qualitative study, Rural health awareness

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INTRODUCTION:

Breast cancer is characterized by the uncontrolled growth of abnormal cells in the breast, leading to the formation of tumors. Breast cancer ranks as the most prevalent cancer affecting women. In 2022, it is estimated that there were 2.3 million new cases of BC diagnosed globally each year (1). The World Health Organization (WHO) has identified three key

pillars for addressing the global burden of breast cancer; health knowledge promotion for early detection, timely diagnosis, and comprehensive management (1). Consistent breast self-examination (BSE) serves as a crucial component in these frameworks, enabling women to actively assess their breast health and identify possible irregularities at an early stage (2,3).

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Women in rural India face significant ignorance regarding breast cancer, along with restricted access to screening, which leads to delayed diagnoses and heightened mortality rates (4). Timely identification through routine breast self-examination (BSE) is a simple, affordable approach that might facilitate the early recognition of changes. However, numerous women receive only verbal instruction regarding BSE, lacking practical training, which may hinder their proficiency in executing it accurately.

The accessibility of mammography services for women presents a significant challenge. The majority of our women belong to low socio-economic strata and possess low educational attainment, resulting in a reluctance to seek medical care upon discovering a breast lump. This is due to their ignorance regarding the implications of the lump, including the stigma associated with community and partner rejection, the potential fear of breast loss, and the significant barrier posed by the prevailing taboo against openly discussing breast cancer, as well as distrust about the efficacy of available treatments for the disease (5).

Numerous breast cancer simulation models are available for practicing breast self-examination, aiding in the detection of anomalies. Recent advancements in simulators have led to the development of products crafted from materials that closely replicate the tactile experience of human breasts. These simulators assist in recognizing indicators of breast tumors, such as skin dimpling, redness, and lumps, which could suggest the existence of breast cysts, fibroadenomas, or tumors. The lifelike appearance and texture of these full-scale models significantly improve clinical training. Campaigns designed to enhance awareness of breast cancer and breast self-examinations (BSEs) can benefit significantly from the incorporation of learning aids and simulation devices, resulting in improved long-term effectiveness and greater adherence to screening protocols (6,7).

The identified barriers to breast cancer screening among rural women: fear and anxiety, lack of awareness and knowledge, financial constraints, cultural and social barriers, and healthcare system issues. This hands-on experience improves knowledge and recall, reduces fear and anxiety among women, and helps prevent breast cancer. This study aimed to explore women's experience after practicing BSE using a breast model, highlighting how hands-on practice influenced their learning and confidence (8).

MATERIALS AND METHODS:

Data

The data were analyzed using Braun and Clarke's six-phase thematic analysis framework. The researcher first familiarized herself with the transcripts, followed by generating initial codes. These codes were then organized into potential

Analysis:

themes and subthemes. The themes were reviewed, refined, defined, and named. Finally, the analysis was developed into a coherent report supported with participant quotations.

Trustworthiness:

Trustworthiness of the data was ensured by establishing credibility through member checking and peer debriefing. Dependability was maintained by documenting all coding and analytical decisions (audit trail). Confirmability was achieved by using a reflexive journal. Transferability was supported by providing rich, thick descriptions of participants' experiences and the study setting.

Research design:

The study commenced with an educational session and hands-on training on breast self-examination (BSE), using a silicone breast model. This study employed a **qualitative, exploratory, and descriptive research design** to explore the experiences of rural women after practicing breast self-examination (BSE) using a breast model. This design was chosen because it allows for an in-depth understanding of personal experiences, feelings, and perceptions through narrative data.

Research population and sampling :

Purposive sampling was utilized to select 30 women from two designated rural locations in Tiruvallur District, India, who engaged in the session. Data saturation was reached by the 26th interview, and confirmed after the 30th interview. Following the explanation of the purpose of the research, individuals who expressed a willingness to participate and satisfied the inclusion criteria were selected as participants. Participants were selected using purposive sampling to enhance sample diversity and encompass varied experiences.

Inclusion Criteria

- Women aged between 30 and 60 years residing in the selected rural area.
- Willing to share personal experiences and perceptions during the interview process.
- Willing to participate in the study and provide informed consent.
- Able to understand and communicate in the local language.
- Have not been previously diagnosed with breast cancer.
- Available and willing to attend the hands-on breast self-examination (BSE) training session using the breast model.

Breast Model:

The breast examination model has been made from a soft, skin-like silicone material that accurately replicates the texture of authentic breast tissue, offering a realistic and effective educational experience. It features embedded lumps of diverse sizes and textures, enabling users to practise recognising anomalies typically encountered in

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breast self-examinations. The model is intended for practical instruction, facilitating the acquisition of accurate palpation techniques and methodical examination practices. Its durable and portable design renders it appropriate for frequent utilisation in community health initiatives. This type is simple to clean and maintain, serving as an essential instrument for fostering early diagnosis and knowledge of breast health.



Figure 1 : Breast Model

The Figure 1 shows Breast Model

Data collection Methods:

Before the commencement of data collection, the interview's purpose was conveyed to the participants. Confidentiality was assured, and informed consent was secured. For participants unable to read or write, the consent form was orally presented in Tamil, the local language, and a thumbprint was provided as evidence of consent. Participants were advised of their right to refuse to answer any question or to terminate the interview at any point for any reason. Furthermore, they were informed that they might request to turn off audio recorder at any time. To minimize researcher bias, the primary investigator maintained a **reflexive journal**, documenting personal reflections, assumptions, and observations during data collection.

Thirty women were chosen from two designated rural regions of Tiruvallur District, India. Data were gathered through individual, in-depth interviews to attain a thorough understanding of women's experiences and perceived benefits associated with performing breast self-examination (BSE) with a breast model. Subsequent to the practical training session, participants were asked for individual interviews held in a private and quiet environment to guarantee comfort and anonymity. A semi-structured interview guide was employed to stimulate dialogue and prompt participants to express their thoughts, emotions, and personal perspectives. Interviews were conducted in the local language, lasted 30 to 45 minutes, and were audio-recorded with prior agreement. Field notes were

additionally recorded to document non-verbal signals and contextual information. The taped interviews were subsequently transcribed and thematically evaluated. All participants were asked the identical questions in their preferred language, Tamil.

1. Warm-up Questions:

- Can you share what you know about breast self-examination?
- Have you ever heard about breast self-examination before today?

2. Experience with the Model:

- How did you feel about using the breast model to practice breast self-examination?
- Was it easy to identify the lumps? Could you feel any differences?

3. Confidence and Retention:

- Do you think you'll remember how to perform BSE after practicing with the model?
- Would you feel comfortable performing BSE by yourself now?

4. Challenges and Barriers:

- What challenges did you face, if any, while practicing the breast self-examination?
- Do you think the breast model helped you understand BSE better? Why or why not?

5. Motivation and Regular Practice:

- How likely are you to perform breast self-examination regularly after today's session?
- What would motivate you to keep practicing BSE?

6. Closing Question:

- Is there anything else you would like to share about today's session or about breast self-examination?

Limitations

Social desirability bias may have influenced participants' responses during interviews.

This study involved a small, purposive sample from two villages, which may limit generalizability. Furthermore, self-reported improvements in BSE practice were not followed up longitudinally to assess sustained behaviour change. Future studies with larger, diverse samples and follow-up assessments are recommended.

RESULTS:

A total of 30 women from two rural areas of Tiruvallur District participated in the study. Thematic analysis of in-depth interviews yielded four major themes with corresponding subthemes. These reflect women's experiences and perceived benefits of hands-on breast self-examination (BSE) using a breast model.

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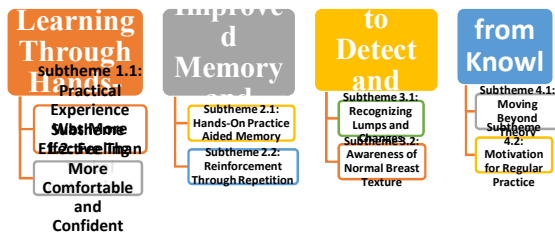


Figure 2 :Themes and sub-themes

The Figure 2 shows the themes and sub-themes

Theme 1: Ease of Learning Through Hands-On Practice

This theme includes the participants' perceptions regarding the enhancement of their understanding of breast self-examination through physical interaction with the breast model. The majority of women indicated that, prior to this session, they had only encountered the concept of BSE theoretically. The use of the paradigm facilitated the transformation of passive listening into active, pragmatic learning.

Subtheme 1.1: Practical Experience Was More Effective Than Verbal Instructions

Participants predominantly reported that tactile interaction with the breast model facilitated a more effective and significant learning experience compared to conventional verbal instructions.

"Before, we only heard about breast self-examination, but now, after practicing, we truly understand what to do."-participant 4

"Listening alone never gave a clear idea. When I touched the model, I knew what to feel."-Participant 9

Subtheme 1.2: Feeling More Comfortable and Confident

Participants expressed reduced hesitation and increased confidence in doing BSE after using the model.

"It was very easy. After trying it with the model, I feel more confident to examine myself regularly."-Participant 11

"The fear was there before. But with practice, that fear is now gone."-Participant 4

Theme 2: Improved Memory and Retention

This theme emphasises that experiential learning markedly enhanced memory retention and recall of BSE procedures among participants. The majority of women observed that the physical activity facilitated retention of learnt material, in contrast to the

forgetfulness associated with information conveyed simply through lectures or booklets.

Subtheme 2.1: Hands-On Practice Aided Memory

Most participants stated that tactile learning made it easier to recall the BSE steps.

"Now it is easy to recall the steps because we practiced them with our own hands."-Participant 13

"The touch helps me remember. It stays in my mind now."-Participant 18

Subtheme 2.2: Reinforcement Through Repetition

Repetitive practice with guidance helped reinforce skills and technique. Participants appreciated the opportunity to repeat the technique until they were confident.

"We were allowed to feel and repeat until we were sure. That helped a lot."-Participant 22

"We didn't just do it once. Practicing again and again made it stick."- Participant 17

Theme 3: Ability to Detect and Identify Abnormalities

This theme illustrates the participants' improved comprehension of the sensations associated with abnormalities during BSE. A significant number of women reported their ability to identify simulated lumps and acquired valuable knowledge on recognising potential warning signs in their own bodies. They also discovered the significance of understanding their own individual norms.

Subtheme 3.1: Recognizing Lumps and Changes

Participants reported being able to detect simulated lumps on the model, increasing awareness of what abnormalities might feel like.

"I could feel the lump on the model; now I know what to check for every month."- Participant 10

"Before, I wouldn't know what a lump is. But now I can recognize it."- Participant 21

Subtheme 3.2: Awareness of Normal Breast Texture

Women emphasized the importance of being familiar with their own normal breast texture.

"Each person's breast feels different, so we should know what is normal for us."-Participant 19

"Now I understand how my breast usually feels. I can find changes early."-Participant 28

Theme 4: Transition from Knowledge to Practice

This theme demonstrates how the hands-on session prompted women to transition from theoretical knowledge to practical implementation. The experience developed a strong sense of responsibility and a drive to incorporate BSE as a consistent self-care routine.

Subtheme 4.1: Moving Beyond Theory

Participants stated that prior to the session, BSE was just a theoretical idea. The model helped turn that knowledge into action.

"We heard about it before but never practiced. Now it feels real and doable."- Participant 6

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"Theory was not enough. Touching and trying made it clear."- Participant 14

Subtheme 4.2: Motivation for Regular Practice

After gaining confidence, many women expressed a desire to incorporate BSE into their monthly routine. "After this session, I have decided to check myself every month. It's easy and can save lives."- Participant 24

"I didn't know how to do it properly before. Now I want to keep doing it regularly."-Participant 30

This structured thematic presentation, supported by authentic voices of rural women, underscores the value of simulation-based BSE training in improving awareness, technique, and long-term adherence.

Table 1: Demographic variables of the women

Demographic variables		(n=30)	
		N	%
AGE	30-39 years	14	46.7
	40-49 years	9	30.0
	50-60 years	7	23.3
RELIGION	Hindu	29	96.7
	Muslim	0	0.0
	Christian	1	3.3
MARITAL STATUS	Unmarried	0	0.0
	Married	28	93.3
	Widow	2	6.7
	Separated	0	0.0
AGE MARRIAGE	< 20 years	14	46.7
	20 - 25 years	16	53.3
	26 - 30 years	0	0.0
	31- 35 years	0	0.0
	36 - 40 years	0	0.0
EDUCATION STATUS	>40 years	0	0.0
	Non-literate	7	23.3
	Primary school education	10	33.3
	High school education	6	20.0
	HSC	3	10.0
	Graduate	4	13.3
OCCUPATION STATUS	Post Graduate and above	0	0.0
	Housemaker	26	86.7
	Professional	0	0.0
	Semi-professional	2	6.7
	Skilled worker	0	0.0
	Unskilled worker	0	0.0
	Clerical/Farmer	0	0.0
	Own business	2	6.7
< Rs.12500	22	73.3	

MONTHLY INCOME	Rs.12500 - 25000	8	26.7
	Rs.25000-60000	0	0.0
	>Rs.60000	0	0.0
AGE MENARCHE	11-12 years	4	13.3
	13-14 years	17	56.7
	15-16 years	9	30.0
	17-18 years	0	0.0
MENSTRUAL CYCLE	Regular	19	63.3
	Irregular	3	10.0
	Attained menopause	7	23.3
	Uterus removed	1	3.3
AGE AT MENOPAUSE IF ATTAINED	Nil	22	73.3
	40-45 years	3	10.0
	46-50 years	5	16.7
	>55years	0	0.0
AGE AT FIRST CHILD	15-20 years	12	40.0
	21-25 years	14	46.7
	26-30 years	4	13.3
NUMBER CHILDREN	Nil	2	6.7
	One	3	10.0
	Two	22	73.3
	Three	3	10.0
	>Three	0	0.0
HISTORY OF BREAST FEEDING	< 6 months	3	10.0
	6 months to 1 year	11	36.7
	1-2 years	10	33.3
	> 2 years	4	13.3
	Not breastfed	2	6.7
METHODS OF FAMILY PLANNING	Puerperal sterilisation (PS)	24	80.0
	Copper -T	2	6.7
	Condom	0	0.0
	Other temporary methods	1	3.3
	Nil	3	10.0
HISTORY OF BREAST CANCER	Yes	0	0.0
	No	30	100.0

DISCUSSION:

This qualitative study explored the experiences of 30 rural women in Tiruvallur District after participating in a hands-on breast self-examination (BSE) training using a breast model. The analysis revealed four major themes: ease of learning through hands-on practice, improved memory and retention, ability to detect and identify abnormalities, and transition

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from knowledge to practice. These findings demonstrate that experiential learning using anatomical models has a substantial impact on women's understanding, confidence, and willingness to perform BSE regularly.

Hands-On Practice Enhances Comprehension and Confidence

Participants reported that tactile engagement with the breast model facilitated a better understanding of BSE techniques compared to verbal instructions alone. This is consistent with the findings of the study, which reported that a structured teaching program significantly improved rural women's knowledge and skill related to BSE (10). The intervention facilitated a deeper internalization of BSE techniques among participants, suggesting that practical approaches are more effective than traditional lecture-based sessions in rural environments.

Improved Memory and Skill Retention Through Repetition

Engaging in repetitive hands-on practice has been shown to improve memory retention and increase procedural accuracy. These findings corroborate previous studies that practice of skill in women regarding BSE revealed that the post-test skill score was improved after a structured teaching programme(10). Experiential learning principles suggest that repetition enhances the retention of cognitive and motor skills, particularly when accompanied by physical involvement (11). The current study supports this finding, as women demonstrated improved recall of BSE steps after repeated practice sessions with the model.

Awareness of Normal and Abnormal Breast Changes

Participants reported a newfound ability to distinguish between normal and abnormal textures in the breast. This aligns with the findings of Kumarasamy et al. (2017), who emphasized that women with increased awareness of BSE were more proficient in recognizing breast abnormalities (9). The use of simulation models in our study helped demystify breast lumps and raised participants' confidence in identifying suspicious changes early.

From Knowledge to Empowered Action

One of the most notable outcomes was the transition from passive knowledge to active engagement. Women expressed a strong intent to perform BSE regularly after the training. This aligns with findings from studies conducted in the UAE (12) and Iran (13), which indicated that participants who performed breast self-exams (BSE) had significantly greater knowledge compared to those who did not perform BSE. The hands-on component in our study bridged this gap between knowledge and action, reinforcing the importance of interactive education in public health outreach.

Implications for Public Health Practice

The present study underscores the potential of low-cost, culturally appropriate simulation models in community education. Incorporating such models into primary health center activities or women's self-help group meetings could promote early detection and reduce breast cancer mortality. Nurses and health educators can play a critical role in facilitating such practical sessions.

CONCLUSION

Hands-on BSE training using breast models significantly enhanced rural women's comprehension, confidence, and motivation to perform regular self-examinations. The findings advocate for broader implementation of such practical education strategies in community and primary care settings to promote early breast cancer detection among underserved populations.

ETHICAL CONSIDERATIONS:

All transcripts were de-identified, and audio files were stored in password-protected systems. Ethical approval was obtained through the Bharath Institute of Higher Education and Research(Ref.No.002/SBMCH/IHEC/2023/2057), and written informed permission was collected from all participants. Confidentiality and voluntary participation were strictly upheld throughout the investigation. The researcher obtained written consent from ACS Medical College and Hospital to conduct study in the communities, as the institution had adopted the two rural districts. The researcher sought permission from community leaders.

AUTHORS' CONTRIBUTIONS:

Conceptualization and supervision: Jenifar monisha.A,Dr. Hema. V.H, ; Methodology: Mrs.Mahizh Punitha Isaiah, Mrs.Vinitha Deva Kumari.T, Dr. Angel Shalini.W, ; Investigation, writing-original draft:Girija.R, Kalpana.R, and writing-review & editing: All authors; Data collection: All authors ; Data analysis: All authors.

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