

Original Research Article

From awareness to action: understanding self-breast examination practices among rural women in Mysuru

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ABSTRACT

Background: Breast cancer is the most common cancer among women worldwide and a major public health concern in India, where delayed diagnosis and poor awareness contribute to high mortality. Self-breast examination (SBE) is a simple, low-cost method that can promote early detection, particularly in resource-limited settings. However, awareness and practice of SBE remain inadequate among women in rural communities. To assess the awareness and practice of self-breast examination and to determine their association with socio-demographic factors among women attending a rural healthcare setting in Mysuru district, Karnataka.

Methods: A cross-sectional study was conducted among 525 women aged 18 years and above attending a rural healthcare facility. Participants were selected through purposive sampling. Data were collected using a pre-tested structured questionnaire covering socio-demographic details, awareness of breast cancer, knowledge and practice of SBE, and perceived barriers. Statistical analysis was performed using SPSS version 28, and associations were assessed using the Chi-square test.

Results: The mean age of participants was 39.60 ± 12.74 years. Awareness of SBE was low, with only 29.7% of women reporting awareness. Among those aware, 75% knew the procedure, but only 10.9% correctly identified the appropriate timing, and regular monthly practice was reported by a limited proportion. Practice of SBE was significantly associated with educational status and family history of breast cancer ($p < 0.05$).

Conclusion: Awareness and regular practice of SBE among rural women were suboptimal. Targeted community-based educational interventions are needed to improve knowledge, correct technique, and regular practice of SBE for early detection of breast cancer.

Keywords: Breast cancer, Self breast examination, Awareness, Practice

INTRODUCTION

Breast cancer remains a major global public health concern and is currently the most frequently diagnosed cancer among women worldwide. According to GLOBOCAN 2022 estimates, approximately 2.3 million new cases and nearly 670,000 deaths were reported globally, making it a leading cause of cancer-related mortality among women.^{1,2} The disease affects women

across all regions and socioeconomic strata, with incidence increasing after puberty and rising with advancing age. Despite significant advances in diagnosis and treatment, survival outcomes vary widely between countries, with disproportionately higher mortality observed in low- and middle-income settings due to delayed diagnosis and limited access to care.^{2,3} Notably, nearly half of breast cancer cases occur in women without identifiable risk factors beyond age and sex, underscoring the importance of population-level awareness and early

detection strategies.² Breast cancer arises from uncontrolled proliferation of epithelial cells within the ducts or lobules of the breast, with the potential to invade surrounding tissues and metastasize to distant organs through lymphatic and hematogenous spread.³ Early-stage disease is often asymptomatic and highly treatable; however, delayed recognition allows progression to advanced stages associated with poorer outcomes.

Evidence consistently demonstrates that early detection significantly improves survival and reduces treatment-related morbidity.² Nevertheless, substantial global disparities persist, with higher incidence reported in high human development index (HDI) countries but relatively higher mortality in low-HDI regions, reflecting inequities in screening, awareness, and healthcare access.^{2,3}

In India, breast cancer has emerged as the most common cancer among women, accounting for nearly one-quarter of all female cancers.³ The country faces a growing burden characterized by rising incidence and high mortality, largely driven by late-stage presentation, inadequate screening infrastructure, and sociocultural barriers that delay care-seeking.^{3,4} Urban-rural disparities, limited access to trained healthcare providers, and low levels of cancer awareness further compound the problem, particularly in resource-constrained settings.³ Studies have consistently reported poor awareness of breast cancer risk factors and early warning signs among Indian women, irrespective of educational or socioeconomic status, contributing to delayed diagnosis and adverse outcomes.⁴ These findings highlight the urgent need for strengthening awareness and early detection strategies tailored to community settings.

Building on the global context, breast SBE has emerged as a practical approach for early detection in resource-limited settings. It is a simple, low-cost, and non-invasive method that helps women become familiar with the normal appearance and consistency of their breasts, facilitating early recognition of abnormalities and timely healthcare-seeking behaviour.^{5,6} SBE also promotes breast health awareness and empowers women, particularly where access to mammography and clinical examination is limited.⁷ Although not recommended as a standalone screening tool, it remains an important awareness-based strategy in low- and middle-income settings.⁸

Despite its advantages, awareness and practice of SBE remain low across populations. Only a minority of women perform SBE regularly, and knowledge levels are often inadequate, with less than half demonstrating correct understanding of technique and timing.^{5,6} The prevalence of regular practice is also low, with pooled estimates around 11% in some settings.⁹ In India, awareness and practice remain suboptimal in community populations.¹⁰ This gap is driven by barriers such as lack of knowledge, fear of cancer detection, misconceptions, and sociocultural factors including stigma and low health

literacy.^{7,8} Evidence shows that targeted educational interventions can significantly improve both awareness and practice of SBE.¹¹

Given these gaps, context-specific evidence is essential, particularly in resource-constrained settings. In India, breast cancer is often diagnosed at advanced stages due to poor awareness and delayed care-seeking.¹⁰ However, limited data exist on SBE practices in community-based populations, especially in semi-urban and rural areas.

The present study is therefore undertaken to assess the awareness and practice of self-breast examination and examine their association with sociodemographic factors among women attending a rural healthcare setting in Mysuru. By identifying existing gaps and determinants influencing SBE practices, this study aims to generate evidence to support targeted, culturally appropriate health education strategies for promoting early detection and reducing delays in breast cancer diagnosis.

METHODS

A cross-sectional study was conducted to assess awareness and practices related to SBE among women attending a rural healthcare setting in Mysuru district, Karnataka. The study was carried out in the rural field practice area attached to a tertiary care teaching hospital between April 2025 to September 2025. The study population comprised women aged 18 years and above attending the selected rural health care facility during the study period. Women who were residing in that area for at least 1 year and willing to participate were included.

Women with a known diagnosis of breast cancer, those undergoing treatment for any breast-related condition, and those who were severely ill or unwilling to provide informed consent were excluded. The sample size was estimated based on the prevalence of awareness of SBE reported in earlier community-based studies, using a confidence level of 95% and an allowable error of 5%. After adjusting for possible non-response, a final sample of 525 women was included in the study. Participants were selected using purposive sampling, wherein all eligible women attending the rural healthcare facility during the study period were approached consecutively until the desired sample size was achieved.

Data were collected using a pre-designed, semi structured questionnaire on breast cancer awareness and SBE practices. The questionnaire consisted of four sections: socio-demographic characteristics, awareness of breast cancer risk factors and warning signs, knowledge of SBE (purpose, timing, frequency, and technique and practice of SBE and perceived barriers to its performance.

The tool was pre-tested on a subset of women outside the study area, and necessary modifications were made to ensure clarity and cultural appropriateness. Data collection was conducted through face-to-face interviews

by trained investigators. The study protocol was reviewed and approved by the Institutional Ethics Committee JSSMC/IEC/250325/53/NCT/2024-25. Written informed consent was obtained from all participants. Confidentiality of information was ensured, and participants identified with breast-related symptoms were referred for appropriate clinical evaluation.

RESULTS

A total of 525 women participated in the study. From Table 1, the age of the participants ranged from 18 to 78

years, with a mean age of 39.60 ± 12.74 years. More than half of the participants (53.1%) belonged to the 21–40 years age group, followed by 36.2% in the 41–60 years age group. The majority of the participants were married (82.9%).

With regard to educational status, 33.7% of the women were illiterate, while 26.5% had completed primary education. Slightly over half of the participants (56.8%) were currently employed. A family history of breast cancer among first-degree or extended family members was reported by 25.1% of the study participants.

Table 1: Sociodemographic characteristics of study participants (n=525).

Variables	Frequency	Percentage
Age (in years)		
< 20	22	4.2
21-40	279	53.1
41-60	190	36.2
Above 60	34	6.5
Area of residence		
Rural	294	56.0
Urban	231	44.0
Marital status		
Married	435	82.9
Unmarried	83	15.8
Divorced	4	0.8
Separated	3	0.6
Education		
Illiterate	177	33.7
Primary education	139	26.5
College and above	129	24.6
Secondary education	80	15.2
Occupation		
Working	298	56.8
Not working	227	43.2

Table 2: Association of socio-demographic variables with knowledge of SBE (n=525).

Variables	Chi-square	df	P value
Age (in years)	15.10	3	0.001
Area of residence	73.46	1	0.000
Marital status	5.72	3	0.126
Education	165.84	3	0.000
Occupation	41.42	1	0.000

Table 3: Association of socio-demographic variables with practice of SBE (n=525).

Variables	Chi-square	df	P value
Age (in years)	1.27	3	0.735
Area of residence	4.57	1	0.032
Marital status	9.22	3	0.026
Education	21.14	3	0.000
Occupation	1.45	1	0.229

Table 4: Association between awareness and practice regarding SBE (n=525).

		Practice		
		Good	Bad	Total
Awareness	Good	97 (62.1%)	59 (37.8%)	156
	Bad	20 (5.4%)	349 (94.5%)	369
		117	408	525
Chi square value: 204		P value: 0.000		

Overall awareness of SBE was found to be low. Only 156 women (29.7%) reported being aware of SBE, while 369 (70.3%) had no awareness of the practice. Among those who were aware of SBE, the most common source of information was healthcare facilities (42.3%), followed by friends and relatives (25.6%) and mass media (32.1%). The majority of aware participants (96.8%) perceived SBE to be necessary, although a small proportion expressed uncertainty regarding its importance.

Among women who were aware of SBE, 117 (75.0%) reported that they knew how to perform the procedure, while 39 (25.0%) did not know the correct method. Regarding knowledge of timing, responses varied considerably: 62.2% believed SBE could be performed at any time, 26.9% reported that it should be performed during menstruation, and only 10.9% correctly identified the non-menstrual period as the appropriate time. Knowledge regarding recommended frequency of SBE was also inconsistent; only 58 women reported that SBE should be performed monthly, while others believed it should be done once every two months, once every three months, or even half-yearly. With respect to learning the technique, 63.5% reported being instructed by healthcare providers, followed by family members (26.3%) and friends (10.2%). Practice of SBE was reported by 97 women, representing 62.2% of those who were aware of SBE. Among these, only 7 participants had initiated the practice before 20 years of age, while the remaining majority began performing SBE after attaining 20 years. Regular monthly practice was reported by 74 women, indicating that although awareness translated into practice for some, adherence to recommended frequency remained suboptimal.

From Table 2 and 3 statistical analysis revealed significant associations between selected variables and awareness and practice of SBE. Among women who were unaware of SBE, 46.1% were illiterate, and this association was found to be statistically significant. Awareness of SBE was significantly higher among women with a family history of breast cancer (62.1%) compared to those without such a history. Furthermore, a statistically significant association was observed between awareness and monthly practice of SBE, with 62.5% of women who were aware reporting regular monthly practice. Table 4 shows association between awareness and practice which was found to be statistically significant. Among participants with good awareness, 97

(91.5%) had good practice, whereas only 20 (5.4%) participants with poor awareness demonstrated good practice. On the other hand, poor practice was observed among 59 (55.7%) participants with good awareness and 349 (94.6%) participants with poor awareness. The Chi-square test showed a highly significant association between awareness and practice ($\chi^2=204$, $p<0.001$). This indicates that participants with better awareness were significantly more likely to have good practice compared to those with poor awareness.

DISCUSSION

The present study demonstrated that awareness of SBE among women was low (29.7%), with a majority (70.3%) lacking awareness. This finding is comparable with studies conducted in similar settings. For instance, a study from Saudi Arabia reported that only 4.2% of participants had adequate knowledge of SBE,⁶ while a study in Ethiopia showed that only 49.9% of participants had good knowledge.⁵ Similarly, a systematic review from India reported that knowledge of SBE ranged widely from as low as 2% to 69.8%, indicating substantial variability but overall inadequate awareness in community populations.¹⁰ These findings suggest that insufficient awareness remains a consistent issue across both developing and transitional settings.

In the present study, although 96.8% of women who were aware perceived SBE as necessary, correct knowledge regarding timing and frequency was inadequate, with only 10.9% correctly identifying appropriate timing and a limited proportion reporting monthly practice. Similar gaps between awareness and correct knowledge have been reported in other studies. A study conducted in Gaza found that while 96.5% of participants had heard of SBE, only 31.4% practiced it regularly.⁷ Likewise, in Saudi Arabia, although awareness of breast changes was reported by 72% of participants, only 26.5% knew the correct frequency of SBE.⁶ These findings highlight that awareness alone does not ensure proper understanding or correct practice. The practice of SBE in the present study was suboptimal, with 62.2% of aware women reporting practice, but only a smaller proportion adhering to regular monthly examination. This pattern is consistent with global evidence indicating low regular practice. A systematic review reported a pooled prevalence of regular SBE practice of only 11.23%, with individual studies ranging from 0% to 26.4%.⁹ Similarly, a study among

women attending health facilities in Ethiopia reported that only 21.1% practiced SBE.⁸ Even in settings with relatively higher awareness, such as Malaysia, only 55.4% of women reported practicing SBE, indicating that consistent and correct practice remains inadequate across populations.

The present study also identified significant associations between awareness and socio-demographic factors. Women with higher educational status and those with a family history of breast cancer demonstrated better awareness and practice. Similar findings have been reported in other studies, where women with at least primary education were significantly more likely to practice SBE (AOR up to 8.96), and those with a family history were more likely to perform SBE (AOR up to 7.46).⁸ Additionally, knowledge and positive attitude have been shown to significantly influence SBE awareness, with individuals having good attitudes being approximately three times more likely to have adequate knowledge.⁵ These findings emphasize the role of education and exposure in shaping preventive health behaviours.

Barriers identified in the present study, including lack of knowledge, incorrect technique, and irregular practice, are consistent with findings from other studies. In Malaysia, 20.3% of women reported lack of knowledge as a major barrier, while 14.3% believed absence of symptoms negated the need for examination, and 4.4% avoided SBE due to fear of cancer diagnosis. Similarly, in Gaza, major barriers included absence of symptoms (39.7%) and lack of knowledge of technique (37.9%).⁷ These findings indicate that misconceptions and inadequate practical knowledge significantly hinder SBE adoption. Importantly, evidence demonstrates that educational interventions can substantially improve both awareness and practice. A quasi-experimental study reported a significant increase in SBE practice from 21.3% to 33.8% following intervention, along with marked improvements in knowledge scores across multiple domains.¹¹ These findings suggest that the gaps identified in the present study are modifiable through structured health education programs.

The findings of the present study are further supported by evidence from other Indian and international studies, which consistently demonstrate low awareness and suboptimal practice of breast cancer screening methods, including SBE. A study conducted among women in Delhi reported that although awareness of certain breast cancer risk factors ranged between 34.7% and 59.5%, only 41.4% practiced breast self-examination regularly on a monthly basis, and less than half (48%) were aware of mammography as a screening tool.¹² This indicates that even in urban populations, knowledge and practice of early detection methods remain inadequate, similar to the gaps observed in the present study. More pronounced deficiencies have been observed in rural populations. A study conducted in central India reported that 81% of

women had no knowledge of breast cancer, and none of the participants were aware of or practiced SBE.¹³ These findings highlight the extreme lack of awareness in rural settings and reinforce the influence of literacy and socioeconomic status on breast cancer awareness and preventive practices. Similarly, a community-based study from rural Trichy found that although 89% of women were aware of breast cancer, only 26% were aware of SBE, 18% had ever practiced it, and merely 5% practiced it regularly.¹⁵ This again demonstrates the significant gap between general awareness and actual preventive behaviour.

Comparable patterns are also evident in other regions. A study conducted in Yavatmal et al reported that while 85% of women were aware of breast cancer, only 59.43% were aware of SBE, and among those aware, only 38.19% practiced it, with many lacking knowledge of correct technique.¹⁶ Similarly, among breast cancer patients in Iraq, 80% had no prior knowledge of breast cancer, and 87.3% had not undergone any form of screening before diagnosis, with a majority (68.7%) detecting the disease incidentally rather than through planned screening.¹⁴ These findings emphasize that lack of awareness and poor screening practices contribute significantly to delayed diagnosis.

Overall, the findings of the present study are consistent with existing literature, demonstrating low awareness and suboptimal practice of SBE, particularly in resource-constrained settings. Given that a substantial proportion of breast abnormalities are self-detected and that SBE is a simple, cost-effective approach, improving both awareness and correct practice is essential. The observed gap between knowledge and practice underscores the need for targeted, community-based interventions focusing on skill development, addressing misconceptions, and promoting regular SBE, especially among rural women.

Limitations

The cross-sectional design of this study limits the ability to establish causal relationships between socio-demographic factors and SBE practices. The employment of purposive sampling at a single rural healthcare facility may result in selection bias, as participants were already engaged in seeking healthcare services and may not accurately reflect the behavior of the wider community. Additionally, the dependence on self-reported data for SBE practice introduces the possibility of recall bias, potentially leading to an overestimation of regular practice.

CONCLUSION

This study reveals that the awareness and correct practice of SBE among rural women in Mysuru are inadequate, with notable gaps in knowledge concerning the appropriate timing and frequency of the procedure. By

identifying education and family history as key factors influencing preventive health behavior, this research contributes to the field by demonstrating that general awareness does not necessarily lead to effective action in resource-limited settings. The findings underscore the urgent public health requirement for targeted, community-based educational programs that extend beyond basic information to offer practical, skill-based training. Enhancing the role of rural healthcare providers in teaching SBE techniques can serve as a cost-effective strategy to empower women, facilitate early detection, and ultimately reduce the mortality burden of breast cancer in rural India.

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