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Awareness of breast cancer and practice of breast self-examination among rural women: A cross sectional study in rural tertiary care hospital, jalgaon

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Abstract
Background: Breast cancer is the most common cancer among Indian women. Breast self-examination (BSE) remains a feasible screening method in resource-restricted settings. Our aim is to assess the awareness of breast cancer and the practice of BSE among women in a rural area of Jalgaon.
Methods: A cross-sectional survey-based study in rural Jalgaon district, Maharashtra, India with 350 adult women who were interviewed using the Breast Cancer Awareness Questionnaire translated in the regional language Marathi.
Results: Less than fourteen in hundred women knew that lump in the breast is a symptom of breast cancer. 284 (81.2%) were unable to state even any single symptom of breast cancer and 306 (87.7%) unable to state even one risk factor of breast cancer. Majority 297 (85.1%) of the women in the study had never heard of BSE and its practice. None of the women participated in the cross-sectional study performed monthly BSE. Only 34 (9.7%) of the women actually performed BSE within the last 6 months period. Women with higher qualification and those who reported a history of a lump in the breast in self or family were significantly more likely to state at least one of the symptoms of breast cancer and were more likely to practice BSE.
Conclusion: The rural women in this cross-sectional study had poor awareness regarding breast cancer and poor practice of BSE.
Awareness of at least one symptom of breast cancer was associated with a 15-fold increase in the practice of BSE. This study has revealed an urgent need to focus on health awareness regarding breast cancer and BSE among rural women.

Keywords: women health, breast cancer awareness, breast cancer, breast self-examination, rural health

Introduction
Breast cancer remains a significant global public health concern, accounting for 2.09 million diagnosed cases and 627,000 deaths annually worldwide.[1] In India, breast cancer (first) has surpassed cervical (second) cancer as the most common cancer among women.[2] Unfortunately, both the incidence and mortality rates of breast cancer are increasing in India, particularly in rural areas where there is a lack of awareness, standard screening programs, and access to early, timely and standard care.[3-5]The incidence of breast cancer in Asian countries occurs at a younger age (40-50 years) compared to Western countries (60-70 years), affecting women during their productive years of life.[6] Early detection and complete treatment are crucial for improving survival rates, but the poor awareness, socioeconomic structure, sociocultural barriers, and limited knowledge of screening options in rural areas contribute to delayed diagnoses and poorer outcomes.[7-11]. This study aims to assess the breast cancer awareness and the practice of breast self-examination (BSE) among women in a rural area of Jalgaon Rural Hospital, Jalgaon -Khandesh region, Maharashtra, India.

Methods
This cross-sectional study was conducted at Jalgaon Rural Hospital in Maharashtra, India, for a duration of 3 months starting from July-September 2022 under supervision of Prof. Dr. Shivaji Sadulwad, HOD, Department of general surgery. The calculated standard sample size was coming as 350, after interviewing 368 women and eliminating incomplete responses and biased responses. Women aged 18 years and above (18 to71), seeking healthcare services or visiting with a patient or relative in the hospital, were invited to participate using language convenient sampling. Oral informed consent was obtained from each participant before administering the study tool in the regional language Marathi. The Breast Cancer Awareness Measure (Breast-CAM), developed by Cancer Research UK, King's College London, and University College London, was translated in Marathi and Hindi by Ms. Priyadarshini D. and used to assess awareness of symptoms, prevalence, risk factors, and standard BSE practices in women. [13-15] The questionnaire also collected sociodemographic details. Data were entered into Microsoft Excel and descriptive biostatistics such as frequency, percentages, mean, and standard deviation were used to describe sociodemographic and variable outcomes.

Results
A total of 368 women participated in the study and 350 responses was accepted after eliminating (incomplete, biased responses and urban women) conducted at Rural Hospital, Jalgaon. The mean age of the participants was 33.40 ± 15.2 years. The majority of women were Hindu (62.8%) and housewives (89.1%). Of the participants, 32.7% were unmarried, with a median marriage duration of 5 years. Most married women (71.4%) had previously given birth to at least one live child. The majority belonged to the lower and middle-middle socioeconomic class (83.2%) and lived in joint families (82.5%) and kaccha makaan (house) (60.8%). While (90.9%) women participated in the study

had heard of breast cancer term at least once in their lifetime, 284 (81.24%) could not identify even a single presentation or symptom. The commonly mentioned symptoms
noted according to responses were nipple discharge, changes in breast size or shape, breast pain, nipple position changes, and redness over the breast. Less than 14% of women recognized breast lumps as a symptom. Only 4.2% reported a history of breast lumps in themselves or their maternal families or relatives. Higher education, higher socioeconomic status, and a history of breast lumps were associated significantly with awareness of at least one symptom. Age, religion, marital status, and parity showed no significant direct associations with the knowledge of breast cancer. Retrospective analysis of data collected revealed that women with higher education were nearly nine times more likely to mention at least one symptom of breast cancer compared to illiterate women (Odds Ratio (OR) = 8.88, 95% confidence interval (CI) = 2.72–28.98). However, socioeconomic status did not account for any significant association after analysis. Women who reported a history of breast lump in themselves or in their family were over five times more likely to mention at least one symptom of breast cancer compared to those who did not report such a history (OR = 5.31, 95% CI = 1.41–19.96). Talking about the risk factors for breast cancer, the majority of the women (87.7%) were unable to mention even a single risk factor. However, some commonly mentioned risk factors were a past history of breast cancer, being overweight, smoking bidi, excessive tobacco and alcohol consumption, and a family history of breast cancer. The majority of the women in the study (85.1%) had never heard of breast self-examination (BSE). Out of the 62 women who had heard of BSE, only 27.3 (7.8%) felt confident about noticing changes in the breast through BSE. Among women television was the most common source of information regarding BSE (51.6%), followed by relatives (24.2%), doctors (12.9%), and books/seminars/campaigns/NGO (9.7%). A small percentage (9.6%) of women had actually performed BSE at least once in the last 6 months. The practice of BSE was significantly associated with higher education, being a housewife, higher socioeconomic status, and a history of a breast lump in self or family. Women who were aware of at least one symptom or one risk factor of breast cancer were significantly more likely to perform BSE. Retrospective analysis showed that awareness of at least one symptom of breast cancer was associated with a 15-fold increase in the practice of BSE. However, none of the other sociodemographic variables retained any significance after analysis. Among the 283 participants who had not heard about BSE prior to the study, an overwhelming majority (91.7%) had curiosity to learn about BSE.

Table 1: Awareness of symptoms of breast cancer among rural women of Jalgaon

Awareness of symptoms of breast cancer among women in rural hospital, Jalgaon	**Symptoms of breast cancer n = 350**
Unaware of any single symptom of breast cancer	283
Nipple discharge with (pus, blood)	42
Change in shape of breast	37
Painful breast	35
Change in nipple position	34
Redness, swelling over breast	33
Lump in the breast	23
Change in size/volume of breast	32
Rashes over skin of breast	25
Inward pulled nipple	24
Dimpling/puckering of the breast	17

Table 2: Association between awareness of at least one symptom of breast cancer with various sociodemographic affecting factors

Variables Education	**Category**	**Awareness of breast cancer symptom yes/no**	**Yes /No**
	illiterate	4	70
	Up to 10th standard	32	152
	Preuniversity	22	82
	College	18	32
Socioeconomic status Using modified BG prasad classification			
	Upper middle	28	151
	Middle middle	26	78
	Lower middle	16	45
	Lowest	8	65
Reported breast lump in self/family			
	No 341	58	283
	Yes 9	7	2

Table 3: Factors associated with awareness of at least one breast cancer presentation/symptoms

Risk factors for breast cancer	**No of participants**
Unaware of any single risk factor for breast cancer	305 87%
Family/Past history of breast cancer	13 3.8%
Genetic	20 5.8 %

Weight increase/loss	12 3.4%
Smoking tobacco, bidi, cigarettes	42 12.1%
Alcohol consumption	12 3.4%
Oral contraceptive use	6 1.7%
Early menarche	5 1.4 %
Late menopause	6 1.7%
Nulliparity	7 1.7%
Sedentary life styles	5 1.4%

Table 4A: Association of practice of breast self-examination with various factors associated

Variables	Practice of breast self- examination	Yes/No
Do you perform BSE	34 9.7%	316 90.3%

Table 4B: Association of practice of breast self-examination with various factors associated
YES = 34(n) for below variables

Education		
	Illiterate	2
	Education till 10th std	7
	Pre university	9
	Higher education	16
Occupation		
	housewife	8
	Self-employed/employed	26
Socioeconomic status		
	Upper middle class	7
	Middle middle class	10
	Lower middle class	8
	Lowest	4
Awareness regarding symptoms of breast cancer		
	Yes	28
	No	6
Awareness regarding risk factors of breast cancer		
	Yes	10
	No	24
History of breast cancer in self/family		
	Yes	2
	No	32

Table 5: Multiple logistic regression with factors associated with the practice of Breast Self-examination with various factors

Variables	Odds ratio	95% confidence interval	P value
Awareness of at least one symptom of breast cancer			
Yes	17	7.44-46.67	< 0.001
no	1		
Awareness of at least one risk factor for breast cancer			
Yes	2.4	0.77-5.44	<0.001
no	1		

Discussion

The current research discovered that women residing in a rural region of Jalgaon-khandesh region had limited knowledge about breast cancer health and awareness. An astonishing 81% of these women were unaware of any single symptom associated with breast cancer. Similarly, a study conducted in rural and peri-urban areas of India revealed inadequate awareness concerning breast cancer symptoms, with only 21.4% of women able to identify at least one symptom. In contrast, in an urban resettlement area of India, 51% of women were aware of at least one symptom. [12] This difference in awareness levels between urban and rural areas may be attributed to limited exposure, restricted access to information, and lower educational attainment among rural women. The most commonly recognized symptom among women is the presence of a breast lump. In a study conducted in urban Delhi, 57% of women identified a lump in the breast as a symptom of breast cancer. [15]

However, less than 10% of women in our study were aware that a breast lump could indicate breast cancer. This finding is concerning, particularly considering that breast lumps are often discovered accidentally among breast cancer patients, and this lack of awareness could decrease suspicion among women regarding breast cancer. In our study, awareness of at least one breast cancer symptom was significantly associated with higher education levels, higher socioeconomic status, and a personal or family history of

breast lumps.[16] A similar study conducted in a rural area of central India also found that women with higher education were more knowledgeable about breast cancer symptoms.[17] Another community-based study among women in Trichy, Tamil Nadu, demonstrated that knowledge about breast cancer and self-breast examination was significantly higher among educated women.[18] This observation is consistent with studies conducted in other developing countries such as Iran, which indicated that women with higher education possessed better awareness of breast cancer symptoms and risk factors.[19] These findings underscore the importance of education in addressing the low awareness of breast cancer among women. The majority of rural women in our study were unable to mention even a single risk factor for breast cancer. However, past or family history of breast cancer, being overweight, nulliparity, and alcohol consumption were among the risk factors mentioned. Similar risk factors were reported in a hospital-based study conducted in South India.[20]

The concept of breast self-examination (BSE) was unfamiliar to most women in our study. Among those who were aware of BSE, they did not know how often it should be performed and lacked confidence in noticing breast changes through BSE.[21] Less than 10% of women had actually performed BSE in the last 6 months, and none of them performed it monthly. Although these figures are significantly lower compared to developing countries like Brazil, where 80% of women practice BSE, it indicates that higher education levels, targeted health interventions, and sociocultural context play a role in overcoming barriers to BSE in developing countries. [22] The practice of BSE was associated with higher education, higher socioeconomic status, and a personal or family history of breast lumps. Women who could identify at least one breast cancer symptom were more likely to perform BSE. Similar findings were reported in studies from other developing countries such as Malaysia [23] and Brazil [24]. This has public health implications as it suggests that improving awareness of breast cancer symptoms and risk factors will also enhance the practice of BSE. While BSE as a screening method has demonstrated a high rate of false-positive results, in the absence of a robust community-based breast cancer screening program, it remains an affordable, acceptable, and appropriate available screening to women. [2-25]

Conclusion

In this study conducted at a rural hospital in Jalgaon, a sample size of 350 women was examined to assess their awareness of breast cancer knowledge and breast self-examination (BSE) practices. The findings indicate a concerning lack of knowledge among rural women regarding breast cancer and breast health. A significant majority, 81.2%, were unable to identify even a single symptom associated with breast cancer, while 87.7% could not identify any risk factors. Notably, less than 10% of the women were aware that a lump in the breast is a potential symptom of breast cancer. Furthermore, the study revealed that 85.1% of the participants had never heard of BSE, and none of the women performed monthly BSE. Only a small fraction, 9.6%, reported engaging in BSE within the last six months. However, women with higher education and those who had personal or family history of breast lumps were more likely to recognize at least one symptom of breast cancer and were also more inclined to practice BSE. Importantly, the study demonstrated that awareness of even a single symptom of breast cancer was associated with an 18-fold increase in the likelihood of practicing BSE. These findings underscore the urgent need to address the lack of health awareness regarding breast cancer and BSE among rural women in Jalgaon. It is crucial to implement various community engagement strategies, including involving grassroots-level health workers, to bridge the knowledge gap and promote early detection of breast cancer in this population. By focusing on improving awareness and encouraging regular BSE, the aim is to enhance early detection rates and potentially reduce the burden of breast cancer among rural women. [2-25]

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Conflicts of interest.

There is no conflict of interests declared by authors.

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