ORIGINAL ARTICLE

Awareness and Practice of Breast Self-examination for Early Detection of Breast Lesions in Pregnant Women

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Received on: 20 January 2024; *Accepted on:* 30 March 2024; *Published on:* 29 April 2024

Abstract

Aim and background: Breast cancer stands out as the most commonly identified cancer among women in the majority of countries globally and is the second most common malignancy affecting pregnancy. Utilizing breast self-examination (BSE) emerges as a valuable screening technique for women that enhances awareness of their breast health, and aids in the detection of any abnormalities that may arise. While BSE is not a substitute for professional screening methods like mammography, it serves as a valuable complement especially in economically challenged areas, contributing to early diagnosis and increased chances of successful treatment. This study aims to assess the awareness and practice of BSE, as well as the sociodemographic factors affecting them, among pregnant women from rural and urban areas of Bengaluru.

Materials and methods: Place of study—Obstetrics and Gynecology and Outpatient Departments (OBG and OPD) of Ramaiah Hospitals and its Rural Centers. Patients were asked to fill out a semi-structured questionnaire, after which BSE was taught and assessed.

Results: A total of 100 subjects from rural and urban localities each took part in this study. Out of which, 7% from rural areas and 45% from urban areas were aware of BSE. A total of 5% and 44% respectively from rural and urban areas knew why BSE was done. The most significant sociodemographic factor was education—in rural areas, awareness of BSE was 4.4% among those with a higher secondary education, compared to 28.6% for degree holders and 33.3% for post-graduates. Similarly, in urban areas, only 28.1% of higher secondary level subjects were aware of BSE, in contrast to 48.8% of degree holders and 59.3% of post-graduates.

Conclusion: There is a notably low level of understanding and practice of BSE among pregnant women, especially in rural areas. It is crucial to promptly establish extensive health education programs to raise awareness and knowledge regarding the importance of BSE.

Keywords: Awareness, Breast cancer, Breast self-examination, Practice pregnancy.

Journal of South Asian Federation of Obstetrics and Gynaecology (2024): 10.5005/jp-journals-10006-2422

Introduction

Breast cancer ranks as the second most frequent malignancy that occurs during pregnancy, impacting roughly 1 in every 3,000 pregnant women.[1] In India, there are currently 75,000 new cases of breast cancer diagnosed each year. The first detectable indication of breast cancer is the existence of a palpable lump in the breast.[2]

Pregnancy-associated breast cancer (PABC) refers to breast cancer that is identified either during pregnancy or within the initial year following childbirth. It ranks among the most frequently occurring tumors within the reproductive age bracket. Earlier studies have noted that around 10% of breast cancer cases among individuals aged 40 years or younger were discovered during pregnancy. Correcting the misbelief that women who are breastfeeding or pregnant are exempt from breast cancer risk is crucial. This highlights the importance of monitoring breast health especially when pregnant. Over 80% of cases of breast cancer are detected when a lump is noticed in the breast.[3]

On a global scale, breast self-examination (BSE), clinical breast examination (CBE) and mammography are the advised screening procedures for detecting breast cancer. However, given the limited availability of testing facilities, particularly in low-resource areas, it is imperative to educate them on BSE as the chief screening approach.[4] Performing BSE can play a valuable role in promptly identifying breast abnormalities, increasing the likelihood of successful treatment. It has also been associated with a reduction in mortality and morbidity. While ongoing debates exist about the efficacy of BSE in detecting breast abnormalities, it could be highly beneficial, especially in rural areas where women do not have access to quality medical services or general mammography. breast self-examinations have been recognized as a highly beneficial and essential screening approach when complemented by regular clinical examinations and mammography.

This study highlights the significance of promoting awareness and providing accurate information about BSE to pregnant women, thereby aiding in the identification of breast abnormalities.

Objectives

- To evaluate the awareness and practice of BSE amidst pregnant women in rural and urban areas of Bengaluru.
- To analyze the sociodemographic factors influencing the awareness and practice of BSE among pregnant women.

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How to cite this article: Singh AM, Mathew JJ, Seshadri JG. Awareness and Practice of Breast Self-examination for Early Detection of Breast Lesions in Pregnant Women. J South Asian Feder Obst Gynae 2024;16(3):252–257.

Source of support: Nil

Conflict of interest: None

Materials and Methods

Subjects were enlisted from the Obstetrics and Gynecology Outpatient Departments at Ramaiah Hospitals and their associated rural centers. The research questionnaire was translated into the regional language, and subjects were asked to fill it out. In cases where a subject was illiterate, they were verbally asked the questions and the investigator completed the questionnaire on their behalf. Participants were invited to gather at a suitable shared location, and the investigator provided health education on BSE and its benefits, using visual aids for reference. Following this, there was a session aimed at resolving any doubts they had regarding BSE. For those already familiar with BSE, a demonstration was requested, allowing corrections as necessary. Participants unfamiliar with BSE were instructed on the entire process. Approval from the Institutional Ethics Committee was obtained to conduct this study.

Ethical Considerations

- Informed written consent was collected from the participants after explaining the risk or benefits associated to the voluntary nature of participation.
- No amount of coercion or pressure was exerted on the participants.
- The participants' confidentiality was upheld throughout the duration of the study.

Inclusion Criteria

All pregnant women who attended the Obstetrics and Gynecology Outpatient Departments at Ramaiah Hospitals and the rural centers affiliated with the Department of Community Medicine of Ramaiah Medical College willingly provided consent to participate.

Exclusion Criteria

Pregnant women with a prior diagnosis of breast cancer.

Sample Size

Hundred in each group (Two hundred totally).

Rationale for Sample Size

According to the literature review, in a study conducted by, Anantha Lakshmi Satyavathi Devi Kommula et al.; it was noted that 16.5% of the women were informed of BSE.[5] In the present study, anticipating a 20% variance in the knowledge level of BSE between rural and urban pregnant women; with a power of 80% and a confidence level of 95%, the calculated sample size was a minimum of 97 in each group. As more women were willing to participate, a 100 women per group were recruited.

Statistical Analysis

Qualitative variables, including the participants' sociodemographic characteristics and the practice of BSE, were represented using frequencies and percentages. For quantitative variables, such as awareness assessments, descriptive statistics, including mean and standard deviation (SD), were used for analysis and presentation. Mann–Whitney *U* test was employed to assess the knowledge scores for statistical significance difference. Additionally, the Chi-square test was employed to ascertain the link between the awareness level and selected socio-demographic factors. For conducting the statistical analysis, SPSS version 17.0 was used. The hypothesis regarding the variables was deemed statistically significant if the *p*-value was determined to be below 0.05.

Table 1: Comparison of knowledge pertaining to breast lesions and BSE between the two groups

	Rural		*Urban*		
Knowledge	*N*	*%*	*N*	*%*	*p-value*
What is a breast lesion?					
No	93	93.0%	57	57.0%	<0.001
Yes	7	7.0%	43	43.0%	
What is BSE?					
No	93	93.0%	55	55.0%	<0.001
Yes	7	7.0%	45	45.0%	
Reason for BSE					
No	95	95.0%	56	56.0%	<0.001
Yes	5	5.0%	44	44.0%	
Source of awareness					
Doctor	4	4.0%	13	13.0%	<0.001
Family member	0	0.0%	4	4.0%	
Friends	0	0.0%	2	2.0%	
News	1	1.0%	10	10.0%	
School	0	0.0%	1	1.0%	
Requirement to note changes in shape/state of breast					
No	83	83.0%	38	38.0%	<0.001
Yes	17	17.0%	62	62.0%	

Results

Totally 200 subjects were involved in the current study, 100 each from rural and urban localities. The mean age of pregnant women residing in urban areas was 27.09 years, with a standard deviation of 4.656. In comparison, pregnant women residing in rural areas had an average age of 24.41 years, with a standard deviation of 4.535. This age group is the most suitable for promoting awareness about BSE and the timely diagnosis of breast cancer.

In our study, from rural areas, only 7% knew what a breast lesion was and 7% had come across BSE before. In contrast, from urban areas, 43% knew what a breast lesion was and 45% had previously been informed about BSE. The objective of BSE was known to only 5% from rural areas compared to 44% from urban areas. On the assessment of the source of awareness of BSE, among the women residing in urban areas, 13% cited doctors, 4% were made aware by family members, 2% by friends, 10% through the media, and 1% through school. Among the women from rural localities, 4% cited doctors as their source of awareness, and 1% through the media. *p*-value was found to be < 0.001, which is statistically significant (Table 1).

On evaluation of the practice of BSE, only 9% from rural areas were already aware of and practicing BSE, whereas in urban areas, it was significantly higher at 34%. Among the 9% of women from rural areas, 6% performed it monthly, 1% performed it 5 monthly, and 2% annually. The *p*-value was determined to be < 0.001, indicating statistical significance. Among the 34% living in urban areas who have practiced BSE, 27% performed it monthly, 5% performed it yearly, 1% performed it weekly and 1% had only performed it once (Table 2).

In our study, from rural areas, 4.4% of the subjects who had studied up to higher secondary level knew what BSE was, compared to 28.6% of degree holders and 33.3% of post-graduates. A similar trend can be seen among the subjects from urban areas wherein

Table 2: Comparison of practice of BSE between the two groups

	Rural		Urban		
Practice of BSE	*N*	*%*	*N*	*%*	*p-value*
Ever performed BSE?					
No	91	91.0%	66	66.0%	<0.001
Yes	9	9.0%	34	34.0%	
If yes, how often?					
Once	0	0.0%	1	1.0%	<0.001
Weekly	0	0.0%	1	1.0%	
monthly	6	6.0%	27	27.0%	
5 monthly	1	1.0%	0	0.0%	
Yearly	2	2.0%	5	5.0%	
Believe learning this examination is useful?					
No	84	84.0%	38	38.0%	<0.001
Yes	16	16.0%	62	62.0%	

Table 3: Comparison of personal breast history between the two groups

	Rural		Urban		
Personal breast history	*N*	*%*	*N*	*%*	*p-value*
Lumps in breast					
No	92	92.0%	91	91.0%	1.00
Yes	8	8.0%	9	9.0%	
Nipple discharge					
No	99	99.0%	100	100.0%	1.00
Yes	1	1.0%	0	0.0%	
Breast tenderness/pain					
No	98	98.0%	97	97.0%	1.00
Yes	2	2.0%	3	3.0%	
Any breast biopsy					
No	100	100.0%	96	96.0%	0.121
Yes	0	0.0%	4	4.0%	
Have you ever had a breast cyst					
No	99	99.0%	99	99.0%	1.00
Yes	1	1.0%	1	1.0%	
Breast redness or swelling					
No	99	99.0%	100	100.0%	1.00
Yes	1	1.0%	0	0.0%	
Did you ever breast feed					
No	62	62.0%	58	58.0%	0.327
Yes	38	38.0%	42	42.0%	
Presence of breast cancer in the family					
No	93	93.0%	96	96.0%	0.269
Yes	7	7.0%	4	4.0%	

only 28.1% of higher secondary level subjects knew about BSE as opposed to 48.8% of degree holders and 59.3% of post-graduates. From rural areas, 7.8% who had studied up to higher secondary level had performed BSE before, in comparison to those who had obtained a degree or completed post-graduation (14.3% and 33.3%, respectively). Likewise, from urban areas, 31.2% who had gone through with their education up to the higher secondary level had performed BSE previously, in contrast to those who had attained a degree or post-graduate qualifications (26.8% and 48.1%, respectively) (Tables 3 to 6).

From rural areas, 5.4% of nulliparous women were aware of BSE, compared to 11.1% with one child. Correspondingly from urban areas, 39.1% of nulliparous women were informed about BSE, while 48.8% with one child, 62.5% with two children, and 100% with three children knew of it. Regarding the practice of BSE, an analogous trend was observed in which 7.1%, 11.1%, and 12.5% of women residing in rural localities with zero, one, and two children respectively had performed BSE previously. From urban areas, 41.3% of nulliparous women, 22.7% with one child, 37.5% with two children, and 100% with three children had performed BSE before (Tables 3 to 6).

From rural areas, 86% were homemakers, among whom only 5.8% knew what BSE was. In contrast, all of the semi-professional and semi-skilled workers had knowledge about BSE. Similarly, from urban areas, 75% of the semi-professionals, 36.4% of the skilled workers, 60% of the semi-skilled workers, and 39.4% of the homemakers were aware of what BSE entailed (Tables 3 to 6).

Table 4: Association of sociodemographic and knowledge on BSE among rural and urban women – A

	Percentage of subjects who are aware			
	Rural		*Urban*	
What is BSE?	*%*	*p-value*	*%*	*p-value*
Education				
Up to higher secondary	4.4%	0.090	28.1%	0.228
Degree	28.6%		48.8%	
PG	33.3%		59.3%	
No. of children				
0	5.4%	0.413	39.1%	0.396
1	11.1%		47.7%	
2	0.0%		62.5%	
3	–		100.0%	
Occupation				
Semi-professional	100.0%	<0.001	75.0%	0.274
Skilled worker	0.0%		36.4%	
Semi-skilled worker	100.0%		60.0%	
Homemakers	5.8%		39.4%	
Others	0.0%		66.7%	

Discussion

Assessment of the Level of Awareness and the Extent to which BSE is Practiced among Pregnant Women Living in Rural Areas and Urban Areas of Bengaluru

Table 1 clearly highlights the disparity in awareness between rural and urban areas. As reported in an article by Mukupo and Mubita-Ngoma, understanding of breast cancer was inadequate in 58% of the urban population, while a much higher percentage, 82%, of rural women had no information on the subject.[6] Notably, substantial discrepancies in knowledge were observed, with those in urban areas exhibiting a greater understanding of breast cancer compared to their rural counterparts. This lack of awareness in rural areas can contribute to higher mortality rates, as evidenced by Shreshtha Malvia et al., in a study which evaluated the epidemiology of breast cancer in Indian women. It revealed that the mortality-to-incidence

Table 5: Association of sociodemographic and knowledge on BSE among rural and urban women – B

	Rural		Urban	
Ever performed BSE?	*%*	*p-value*	*%*	*p-value*
Education				
Up to higher secondary	7.8%	0.036	31.2%	0.557
Degree	14.3%		26.8%	
PG	33.3%		48.1%	
No. of children				
0	7.1%	0.754	41.3%	0.132
1	11.1%		22.7%	
2	12.5%		37.5%	
3	–		100.0%	
Occupation				
Semi-professional	0.0%	0.017	62.5%	0.017
Skilled worker	50.0%		18.2%	
Semi-skilled worker	100.0%		80.0%	
Homemakers	8.1%		26.8%	
Others	0.0%		66.7%	

Table 6: Association of sociodemographic and knowledge on BSE among rural and urban women – C

Believe learning this examination is useful?	Rural		Urban	
	%	*p-value*	*%*	*p-value*
Education				
Up to higher secondary	12.2%	0.001	59.4%	0.506
Degree	42.9%		63.4%	
PG	66.7%		63.0%	
No. of children				
0	12.5%	0.519	56.5%	0.335
1	19.4%		61.4%	
2	25.0%		87.5%	
3	–		100.0%	
Occupation				
Semi-professional	0.0%	0.009	75.0%	0.799
Skilled worker	100.0%		72.7%	
Semi-skilled worker	100.0%		60.0%	
Homemakers	14.0%		57.7%	
Others	10.0%		66.7%	

ratio soared to 66 in rural registries, while it remained as few as 8 in urban registries.[7]

In assessing sources of awareness of BSE, the most common sources were doctors and the media as seen in Table 1. Therefore, it can be deduced that women who lack exposure to mass communication, such as television and magazines, and have not received knowledge from healthcare professionals, tend to have limited awareness about BSE. Consequently, there is an immediate requirement for medical education on BSE to promote a better understanding of the subject among the general public. This education can be disseminated through health facility-based discussions and mass media outlets.

On assessment of the practice of BSE as seen in Table 2, the results are similar to an article by Hemalatha Kumaraswamy et al. on the knowledge of BSE, wherein only 14% of the women were aware that BSE should be conducted on a monthly basis.[8] The majority of them (71.5%) lacked awareness regarding the recommended time interval for consecutive BSEs, with 14.5% believing it should be done annually. Given the increasing occurrence of breast cancer, along with the absence of a standardized breast screening approach in many countries, it is crucial to evaluate the understanding and implementation of BSE across different age groups. The actual implementation of BSE shows inconsistency and remains relatively low in different countries. For instance, it is 54% in England, between 19 and 43.2% in Nigeria, and varies from 0 to 52% in India.[9,10] In our study, 62% living in urban areas felt that learning this examination is useful in comparison to only 16% from rural areas.

On the assessment of the personal breast history of the subjects, it was observed that 7% and 4% respectively from rural and urban localities had a familial breast cancer history (Table 3). The vast majority of subjects lacked familial history, which could point to the prevalence of inadequate knowledge about BSE among them. Familial breast cancer history is a recognized risk factor for the disease.[11] However, the American Cancer Society notes that most women with an immediate family member who has breast cancer will not develop the condition, while a significant number of women without a family history will experience it. This discrepancy could be clarified by the fact that women with a familial breast cancer history have a higher tendency to adhere to breast examinations.[12] This correlation is supported by a study done by Haber et al., who found that women having familial history displayed elevated levels of risk awareness and were more prone to undergo repeated breast screenings.[13] They tend to have greater awareness of the disease, most probably due to their firsthand experience with their family members' struggles with it.

A total of 42% from urban areas and 38% from rural areas gave a history of previously breastfeeding. In a study done in Wolaita Sodo, Ethiopia, women who practiced breastfeeding for a duration of up to 24 months were 2.43 times more inclined to conduct BSEs.[14] This could be linked to the possibility that women who breastfeed for an optimal period could have a heightened awareness of or education about performing BSE.

Assessment of the Sociodemographic Factors Influencing Awareness and Adherence to BSEs in Pregnant Women

Education

It is evident that educational factors play a significant role in the subjects' awareness of BSE, from our study. A significantly higher proportion of individuals with educational backgrounds at the degree and post-graduate levels, in both rural and urban areas, demonstrate awareness of BSE and have performed BSE previously, as opposed to those with education limited to the higher secondary level. A similar pattern was noted when the subjects were asked if they believed learning BSE was useful—a greater positive response was seen among those educated beyond the higher secondary level. Hence, our study reveals a distinct connection between the participants' educational qualifications and their awareness of BSE. Similar findings were noticed in a study among women conducted in Qatar wherein those with higher education possessed a more comprehensive understanding of breast cancer and BSE, and a substantial disparity was evident in every knowledge-related response when comparing women with lower and higher levels of education.[15,16]

Number of Children

In our study, as evidenced in Tables 4 and 5, it is seen that the increase in parity in general is linked to increased awareness and practice of BSE. As seen in Table 6, increase in parity is linked to a view that learning BSE is useful. Thus, we can infer from this data that a higher parity is connected with an increase in awareness and practice of BSE. This could be credited to the possibility that women who breastfeed their children have a higher tendency to examine their breasts as opposed to nulliparous women, as evidenced in an article by Temesgen Lera et al, which found that women who breastfed their children for an optimal duration of 13–24 months were 2.43 times more inclined to conduct BSE.[14,17,18]

Occupation

In our study, the overwhelming majority from rural areas (86%) were homemakers, and within this group, only 5.8% were familiar with BSE, whereas, all of the semi-professional and semi-skilled workers possessed awareness of BSE. Correspondingly, from urban areas, greater proportions of the semi-professionals, skilled workers, and semi-skilled workers were aware of what BSE comprised when compared to the homemakers. A similar trend is observed in the evaluation of practice of BSE, wherein the greatest fraction of them that have performed BSE previously are among the semi-professionals and semi-skilled workers. A statistically significant *p*-value (< 0.05) was observed in the relationship between the awareness and practice of BSE and the occupation of the subjects. Likewise, in another study done to assess the determinants of practice and awareness of BSE in Tamil Nadu, employed women have a relatively better knowledge about BSE in comparison with those who are unemployed.[8] Semi-professional and skilled workers also had a higher proportion of women who believed that learning how to perform BSE was beneficial. Therefore, in our study, we can deduce that working women are more inclined to have a higher level of understanding and awareness regarding BSE and its practice compared to homemakers.

Limitations

In our study, we found that the number of semi-professional, skilled, and semi-skilled workers in rural areas was comparatively much lower than the number of homemakers. Therefore, conducting additional studies with a larger sample size from these occupational groups would strengthen the reliability of our findings.

Conclusion

Breast self-examination is widely acknowledged as a practical and inexpensive method for prompt diagnosis of breast cancer, particularly in resource-constrained settings like developing countries such as India. However, the outcomes of this study have underscored a concerning trend: The understanding and practice of BSE among pregnant women were revealed to be at alarmingly low levels.

To address this situation, there is an urgent requirement to implement comprehensive health education programs designed to increase awareness and knowledge about the significance of BSE. These programs should be delivered through various channels to reach a wide audience. By doing so, we can equip individuals, especially pregnant women, with the essential knowledge and skills necessary for effective BSE.

Furthermore, to tackle the root causes of this issue, we must intensify efforts, especially in rural areas, to promote higher education and employment opportunities. This is vital because higher educational attainment and employment have been shown to correlate with increased awareness and adherence to BSE practices. By enhancing access to education and economic opportunities, we can empower women to take charge of their own health and promote preventive measures like BSE.

Finally, boosting public awareness about breast cancer, its origin, risk factors, and preventive measures, plays a pivotal role in the solution. Organizing health education and awareness campaigns can facilitate the dissemination of knowledge regarding breast cancer.

In summary, this study highlights the necessity for a multifaceted approach to address the issue of low BSE awareness and practice. This not only includes health education but also the encouragement of education and employment opportunities, along with robust awareness campaigns. By taking these measures, we can work towards relieving the strain of breast cancer and enhancing the well-being of individuals, especially pregnant women, in our communities.

Ethical Approval

All procedures adhered to ethical standards set by the committee on human experimentation (Ethical Review Board, MS Ramaiah Medical College, Bengaluru) and conformed to the principles of the Helsinki Declaration of 1975, as revised in 2008(5).

All patients provided informed consent to participate in the study.

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