Original Research Article

Perception of breast cancer and self-breast examination practices among women in Lucknow, north India

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ABSTRACT

Background: Breast cancer is the leading cause of mortality and morbidity among women worldwide. It is one of the prime health issues in developed and developing countries because of the high prevalence of known risk factors. In the present study, we assess the knowledge of breast cancer and breast self-examination (BSE) screening practices among women in the capital city, Lucknow, Uttar Pradesh, North India.

Methods: This cross-sectional study was conducted in urban and rural areas of Lucknow. The period of study was one year, starting from December 2020 to November 2021. Data were obtained from 400 adult women (212 rural and 193 urban) using a pretested, self-administered questionnaire. Participants aged >20 years were randomly selected from two rural and two urban community health centres (CHCs). The questionnaire assessed respondents' socio-demographic characteristics, risk factors, signs and symptoms, early detection methods, and knowledge and practices related to self-breast examination among women in Lucknow.

Results: Out of 400 respondents, only 33.5% (rural) and 55.96% (urban) women had heard of breast cancer. 17.55% (rural) and 13.47% (urban) women had heard about BSE. 4.72% (rural) and 8.81% (urban) women practice BSE occasionally. Knowledge about breast cancer, its symptoms, risk factors, and screening methods was similarly poor in women of Lucknow.

Conclusions: This finding correlated significantly with older age, higher levels of education, and occupation. There is a low level of awareness of breast cancer in Lucknow's urban and rural areas. BSE is hardly practiced, though the willingness to learn it is high.

Keywords: Awareness, Breast cancer, Breast self-examination, Practices, Risk factors, Screening

INTRODUCTION

According to the World Health Organization, breast cancer affects women more frequently than any other type of cancer.[1] 15% of all cancer-related deaths are due to breast cancer and 25% of all cancer cases among women are breast cancer cases.

This article provides an update on the global burden of cancer using GLOBOCAN 2020 projections from the International Agency for Research on Cancer.[2] Worldwide, 19.3 million new cases of cancer were forecasted for 2020 (excluding non-melanoma skin cancer), with more than 10 million cancer-related fatalities (9.9 million excluding non-melanoma skin cancer). Female breast cancer has surpassed lung cancer as the most prevalent malignancy diagnosed, with a predicted 2.3 million new cases (11.7%).[2] Compared to developing countries like India, where it affects younger people, developed countries with affluent economies have women over 50 who are more likely to develop breast

cancer. As cancers in the age group of the younger 15-34 age range are disposed to be more aggressive, there is an urgent need for initiatives to raise awareness of breast cancer among younger women and implement early (BSE).

Early detection of the disease is imperative to ensure survival. According to The Indian Council of Medical Research, not only has the 5-year survival rate has reported reaching approximately (85%) with early detection, but also it has decreased to (56%) with later diagnosis.[3] There are screening techniques, including BSE, CBE, and Mammography, for early detection, but their use is limited owing to a lack of resources, in particular shortage of infrastructure, labor, and knowledge.

Therefore, BSE is recommended in underdeveloped nations for early breast cancer detection since it is uncomplicated, affordable, easy, and time-saving.[4] BSE is seldom practiced in low-income countries like India.[5] Despite its uncommon usage, the breast health global initiative advises using BSE to lessen breast cancer-related mortality in underdeveloped and developing nations.

This study compares breast cancer awareness and screening procedures among urban and rural women. Knowledge of Breast cancer and practices related to self-breast examination among women in Lucknow, North India has been assessed via a structured questionnaire. It contrasts the knowledge and practices of the female populations in urban and rural areas on breast cancer screening and their awareness about BSE.[5]

Most women lack essential awareness of breast cancer and the screening techniques used to detect it and seldom use them. In comparison to rural women, it has been shown that urban women were more likely to have heard about breast cancer. The urban population's higher literacy rate is the main factor. More literate women have an edge in comprehending numerous health concerns and early breast cancer screening. Better health infrastructure in urban regions compared to rural ones provides a compelling explanation for the gap in awareness of breast cancer incidence between urban and rural locations. Therefore, mammograms that enable the diagnosis of early-stage breast cancer are more common among urban women. Contrarily, women in rural areas are less likely to receive proper health services, including diagnosis and treatment.

Furthermore, given that the influence of the western lifestyle has led to higher BMI values, increased alcohol consumption, increased access to oral contraceptives and hormone replacement therapy, as well as higher exposure to xenoestrogens and other environmental toxins, it has become highly crucial to raise awareness among urban women regarding the risks and role of these factors in the

incidence of breast cancer. To thoroughly explore these potential risk factors, more research is required.

METHODS

This cross-sectional study was conducted on 400 women aged ≥20 years for the period of one year starting from December 2020 to November 2021.

Inclusion criteria

Patients selected randomly from urban and rural areas of the district of Lucknow.

Exclusion criteria

Women aged <20 years were excluded.

Sample size

The number of individuals was estimated using the cross-sectional study sample size formula: $n = (Z_{(\alpha/2)})^2 \, p \, q/d^2$ (α=5 %, Z=1.9, n = sample size, q=1-p, p=prevalence of knowledge of breast cancer =57%, d=relative error). Based on a previous study by Dahiya et al.[6], in which the rate of knowledge of breast cancer was 57%, the sample size was calculated at 95% confidence levels, and the 5% margin of error was calculated to be 400. Considering the 10% non-response, the final sample size was estimated to be 400.

A pre-designed and pre-tested semi-structured questionnaire made by subject experts in the department was used for data collection. Information was collected regarding 1) Socio-demographic characteristics (age, marital status, religion, category, educational qualification, occupation, total no of family members, Socioeconomic status), 2) Knowledge of the risk factors, signs, and symptoms of breast cancer, 3) Knowledge and practice of breast self-examination, 4) Knowledge of investigations done for Breast cancer.

The questionnaire was pretested on 25 women of age ≥20 years at community health centres in the city. Consequently, a few questions were reframed, and other minor modifications were made to the questionnaire, considering the comprehension difficulties faced during pretesting. The questionnaire was face validated by subject experts in the department. Completed questionnaires were checked weekly for consistency and completeness.

Interviews were managed thoroughly with participants personally to evaluate their knowledge of signs and symptoms, risk factors, early detection methods of breast cancer, and screening practices related to breast self-examination. Demographic information, including age, education level, occupation, marital status, and socioeconomic status of all the respondents, was collected, and their beliefs and awareness towards breast

cancer and its screening practices were studied. For calculating socioeconomic status, the modified B.G. Prasad scale was used.[7] Responses to various queries were encoded in numbers, and their frequency distribution was calculated using SPSS software (Version 24).

RESULTS

A total of 400 women were included in the study. The socio-demographic analysis of the population is presented in Table 1.

Table 1: Distribution of participants according to socio-demographic characteristics.

Question	Rural (212)		Urban (193)	
	Frequency	Percentage	Frequency	Percentage
Age (years)				
≤20	10	4.72	16	8.30
21-30	137	64.62	136	70.46
31-40	54	25.47	31	16.06
41-50	7	3.30	9	4.66
51-60	4	1.89	1	0.52
Marital status				
Single/never married	7	3.30	7	3.63
Married	204	96.23	184	95.34
Separated	-	-	-	-
Divorced	-	-	-	-
Widowed	1	0.47	2	1.04
Religion				
Hindu	199	93.87	123	63.73
Muslim	13	6.13	68	35.23
Sikh	-		1	0.52
Christian	-		1	0.52
others	-		-	-
Category				
General	30	14.15	74	38.34
OBC	74	34.91	78	40.41
SC/ST	108	50.94	41	21.24
Educational qualification				
Illiterate	102	48.11	57	29.53
Up to Primary school	19	8.96	14	7.25
Middle school	29	13.68	27	13.99
High-School	29	13.68	26	13.47
Senior secondary school	13	6.13	22	11.40
Graduate and above	19	8.96	47	24.35
Occupation				
Professional/technical/administrative/managerial	1	0.47	3	1.55
Clerical	1	0.47	2	1.04
Sales and services	-	-	-	-
Skilled manual	7	3.30	7	3.63
Semi-skilled	9	4.25	3	1.55
Unskilled manual	5	2.36	4	2.07
Agriculture	-	-	2	1.04
Unemployed/housewife	189	89.15	172	89.12
Retired/pensioner	-	-	-	-
Socioeconomic status (SES) (Modified B.G Prasad's classification)				
Class I	2	0.94	10	5.18
Class II	20	9.43	28	14.51
Class III	23	10.85	19	9.84
Class IV	76	35.85	62	32.12
Class V	90	42.45	73	37.82

Table 2: Distribution of the participants based on awareness and knowledge of breast cancer in relation to reproductive and family history as well as personal factors and harmful exposure which can cause breast cancer.

Question	Rural (212)		Urban (193)	
	Frequency	Percentage	Frequency	Percentage
Heard of breast cancer	71	33.5	108	55.96
ASHA/ANM/health worker	23	10.85	19	9.84
TV/radio/internet/magazine/newspaper	11	5.19	27	13.99
Relatives/friends	62	29.25	76	39.38
Hospitals/CHC/PHC/Doctor	37	17.45	34	17.62
Others	14	6.60	52	26.94
Menstrual, reproductive and family history				
Age is a risk factor	9	4.25	16	8.29
Can breast cancer occur in males too?	21	9.91	23	11.92
Relation with menstruation	9	4.25	10	5.18
Relation with pregnancy	4	1.89	5	2.59
Relation with breastfeeding	21	9.91	49	25.39
Risk with breastfeeding	7	3.30	13	6.74
Heard about HRT	15	7.08	25	12.95
HRT a risk factor for breast cancer (25)	4	1.89	6	3.11
Oral contraceptive pills	15	7.08	12	6.22
Positive family history of breast cancer or ovarian cancer	25	11.79	41	21.24
Risk of recurrence if there is previous history of breast cancer	33	15.57	55	28.50
All lumps develop in breast cancer later in life?	10	4.72	18	9.33
Personal factors and harmful exposure				
Alcohol consumption	24	11.32	35	18.13
Smoking	28	13.21	37	19.17
Chemicals(packed food, coloured fruits and vegetables, cosmetics)	35	16.51	39	20.21
Exposure to radiation	17	8.02	26	13.47
Exposure to Pesticides	26	12.26	21	10.88
Overweight women	18	8.49	32	16.58
High fat diet	17	8.02	39	20.21
Physical inactivity	18	8.49	33	17.10
Stress	16	7.55	31	16.06
Consuming sugar	10	4.72	2	1.04
Deodorant	10	4.72	5	2.59
Breast Injury	33	15.57	52	26.94
Wearing tight brassiere	24	11.32	43	22.28

The majority of the respondents belong to the age group 20-30 years (64.62% of rural responders and 70.46% of urban responders). 96.23% (rural) and 95.34% (urban) women were married. The majority followed Hinduism (93.81% rural and 63.73% urban). 89.15% (rural) and 89.12% (urban) women were homemakers. There were a comparatively higher number of respondents from class V socio-economic status (SES) (42.45% and 37.82% in rural and urban areas, respectively).

Women who had heard of breast cancer (33.5% rural, 55.96% urban), the most common source of information was from relatives/friends (29.25% rural, 39.38% urban), followed by Hospital/Doctor (37% rural, 17.62% urban).

The respondents' knowledge of risk factors in breast cancer is presented in Table 3. (4.25% of rural and 5.18% of urban) women were of the opinion that it is related to menstruation, while (1.89% of rural, 2.59% of urban) women opined that it is related to pregnancy. Most women (9.91% rural, 25.39% urban) said that it is related to breastfeeding, and among them, 3.3% rural and 6.74% urban women know that those who do not breastfeed are at risk. OCP, positive family history of breast cancer, and previous history were expressed as risk factors by 7.08% rural, 6.22% urban; 11.79% rural, 21.24% urban; 15.57% rural, and 28.50% urban respondents, respectively.

Among the lifestyle risk factors, alcohol was attributed to 11.32% (rural) and 18.12% (urban) women, smoking by

13.21% of rural and 19.17% of urban respondents. Being overweight was stated as a risk factor by 8.45% (rural) and 16.58% (urban) respondents, while a high-fat diet by 8.02% (rural) and 20.21% (urban) respondents. Physical inactivity was treated as a risk factor by 8.49% (rural) and (17.10%) urban respondents, while stress was treated as a risk factor by 7.55% (rural) and 16.06% (urban) respondents.

Knowledge regarding symptoms and signs of breast cancer showed that a palpable lump in the breast or axilla and pain in any area of the breast was stated as a symptom by the majority 23.58% (rural), 49.74% (urban) and 28.30% (rural), 50.26% (urban) respondents respectively. While puckering or dimpling and ulceration of the breast were considered as risk factors by 11.79% (rural), 26.94% (urban), and 18.40% (rural) and 26.42% (urban) respondents respectively, and unusual discharge from nipple by only 5.19% (rural), 15.03% (urban) respondents.

Table 3: Distribution of the participants based on knowledge of symptoms and signs of breast cancer, investigation for Breast Cancer and BSE.

Question	Rural (212)		Urban (193)	
	Frequency	Percentage	Frequency	Percentage
Palpable lump in breast or axilla	50	23.58	96	49.74
Unusual discharge from the nipple (clear, bloody or another color)	11	5.19	29	15.03
Inversion of the nipple	1	0.47	7	3.63
Redness, dryness and flaky skin in the nipple area or breast	32	15.09	68	35.23
Pain in any area of breast	60	28.30	97	50.26
Change in size and shape of breast	42	19.81	52	26.94
Puckering, dimpling (like the skin of an orange) and irritation of breast skin	25	11.79	20	10.36
Ulceration of breast	39	18.40	51	26.42
Age at which women should go to the doctor for examination of the breast				
After 20 yrs	4	1.89	4	2.07
After 30 yrs	7	3.30	13	6.74
After 50 years	1	0.47	2	1.04
only when symptom arrive	12	5.66	10	5.18
Don't know	12	5.66	28	14.51
Others	9	4.25	4	2.07
Heard of mammogram	9	4.25	10	5.18
Heard of ultrasound of breast	10	4.72	13	6.74
Facility visited by the respondent if they have breast related problem				
Sub center	-		-	
PHC/CHC	30	14.15	33	17.10
District hospital	2	0.94	3	1.55
Medical college	4	1.89	2	1.04
Private hospitals or clinics	1	0.47	10	5.18
Others (please specify)	7	3.30	12	6.22
Breast self-examination (BSE)				
Heard of Breast self-examination	16	7.55	26	13.47
Sources of information:				
ASHA/ANM/Health care worker	14	6.60	24	12.44
TV/radio/internet/magazine/newspaper	7	3.30	9	4.66
Relatives/friends	5	2.38	13	6.73
Hospital/CHC/PHC	8	3.77	14	7.25
School /college/books	15	7.08	24	12.44
Know of screening method to detect early breast cancer	11	5.19	24	12.44
Done by women	1	0.47	15	7.77
Women herself looking and feeling each breast for possible lumps	11	5.19	15	7.77
Know how to perform BSE	10	4.72	21	10.88
Practice BSE	10	4.72	17	8.81
How often is BSE practiced?				

Continued.

Question	Rural (212)		Urban (193)	
	Frequency	Percentage	Frequency	Percentage
Never	9	4.25	8	4.15
Daily	2	0.94	2	1.04
Weekly	-		8	4.15
Monthly	-		2	1.04
Yearly	-		-	
Occasionally	-		-	
During menses	-		-	
What is the appropriate time to do BSE?				
During menstruation	1	0.47	-	
A week after periods	1	0.47	6	3.11
any time within month	5	2.36	1	0.52
During breastfeeding	-		-	
During pregnancy	-		-	
Don't know	3	1.42	9	4.66
BSE started from what age?				
From puberty	-		7	3.63
From 20 years	2	0.94	1	0.52
20-30yrs	3	1.42	8	4.15
More than 35 yrs	2	0.94	2	1.04
Never done	-		1	0.52
Others	1	0.47	1	0.52
How is breast self-examination done?				
Palpate with one finger	-		2	1.04
Palpate with palm	2	0.94	-	
Palpate with a minimum of three fingers	5	2.36	7	3.63
Hold breast in between fingers	1	0.47		
Don't know	1	0.47	3	1.55
Others	1	0.47	8	4.15
How BSE is practiced?				
Inspection of breast	-		-	
palpation of breast	-		2	1.04
Inspection and palpation of breast	-		-	
Palpation of breast during shower	-		-	
Others	-		9	4.66
Reason for not performing BSE				
Unaware of the need	1	0.47	1	0.52
Don't have any breast problem	-		1	0.52
Don't think i should do	-		2	1.04
Don't know how to do	-			

It was found that 7.55% of rural and 13.47% of urban women were aware of breast self-examination and its related practices. The primary source of information was relatives/friends (2.36% rural, 6.73% urban), followed by ASHA/ANM/Health care workers (6.6% rural, 12.44% urban). Some (4.72% rural, 8.81% urban) women were practicing BSE, and the majority were practicing it occasionally. A majority of respondents started self-examination of their breasts at a young age of 20–30, and the main examination technique used was inspection and palpation (5.19% in rural areas and 7.77% in urban areas).

Most women (5.66% rural, 14.51% urban) do not know the age at which women should go to the doctor to examine their breast. Some women (4.25% rural, 5.18% urban) heard about mammograms, while nearly (4.25% rural, 6.74% urban) women have heard about breast ultrasound. The majority (14.15% rural, 17.1% urban) responded that they would visit PHC/CHC if they had a breast-related problem.

DISCUSSION

This study evaluates the level of understanding regarding breast cancer and self-breast examination practices among females aged 20 years and above residing in both

rural and urban areas of Lucknow. Among the participation population, in the rural population, the majority of women were from the 21-30 age group (64.62%); in the urban population, women in the age group of 21-30 were predominant (70.46%). This was consistent with previous study in which women from 18-30 years (66%) were predominant among the participants.[8] This can be attributed to the fact that both the studies have targeted their study results on women of young age group when the chances of development of breast cancer are higher as it is the most prevalent cancer in young adult women in the age group of 15-40 years old. There is a higher likelihood of young women having genes linked to a family history of cancer, larger breast tumors, metastasis, and unfavourable outcomes compared to older women.[9]

Among 33% percent of women in the rural group who had heard of breast cancer, 29.2% of them had obtained the information from relatives and friends. Similarly, 39.38% of 55.9% of urban women who were aware of breast cancer had received information from relatives and friends. Relatives and friends being the major source of information can be attributed to the fact that women probably have knowledge of breast cancer through their relatives or friends who were diagnosed with breast cancer. A similar distribution of the source of information was found in a previous study where the source of information from relatives and friends constituted about (42%).[10] Given that raising public awareness of cancer is essential for the early management of cancer, careful considerations about the source of information may be helpful in creating increased awareness and early detection. Inadequate awareness may result in a delayed diagnosis and poor uptake of screening modalities.[11]

Among the urban population, only 4.25% considered age as a risk factor for breast cancer, compared to 8.29% in the rural group. However, this percentage was not statistically significant as most participants were uncertain about the relationship between age and breast cancer. This finding is consistent with the study conducted by Kumar et al, in which nearly half of the participants believed that the age group of 25-45 years has the highest risk of developing breast cancer.[12,13] 4.25% of women in the rural group, while 5.18% of women in the urban population considered menstruation as a risk factor for the increased incidence of breast cancer. Although, this is not a statistically significant number which is in agreement with a study by Bala and Gameti 2011 where only 8% of the women had knowledge about the association of menstruation with pregnancy.[13,14] Changes in the levels of circulating estrogen and progesterone during the menstrual cycle increase a woman's risk of developing breast cancer because they have an impact on the extracellular matrix, stem cells, and the turnover of the mammary epithelium.[14] They also control the phenotype and function of immune and stromal cells in the mammary gland. Collectively, these occurrences could lead to genome instability, raise

the possibility of random genetic mutations, reduce immune surveillance, and foster tolerance in the mammary gland causing the development and progression of breast cancer.

Most breastfeeding mothers experience hormonal changes during lactation that delay their menstrual cycles, resulting in reduced hormone exposure, particularly to estrogen. Prolonged breastfeeding can provide greater protection against breast cancer in women. The high incidence of breast cancer in developing countries is primarily linked to the absence or brief duration of breastfeeding, which can be attributed to the lifestyle changes adopted by urban women.[15] The study found that 25.39% of urban participants were aware of the connection between breastfeeding and pregnancy, whereas only 9.91% of women in the rural group were aware of this association. This shows that both rural and urban women have good knowledge of the relationship between breastfeeding and breast cancer. 75.9% of all participants were of the opinion that breast cancer is more common in women who do not breastfeed their children. These results are consistent with the studies conducted by Kohkkar et al and Dahiya et al, which reported that 59.2% and 48.2% of women, respectively, believed that those who do not breastfeed are at a higher risk for developing breast cancer.[6,16] The societal variables and policies that affect breastfeeding rates require improvement. Community-level interventions, including peer counseling, hospital policy changes, clinic appointments specifically for breastfeeding, group prenatal education, and improved breastfeeding programs, should be implemented.

While only 7.08% of rural women and 6.22% of urban women were aware of the link between oral contraceptive pills (OCPs) and breast cancer, they had inadequate knowledge about how the duration of OCP intake was linked with the development of breast cancer. Similar results were found in a study where 38.57% of women were cognizant that OCPs are associated with an increased risk of breast cancer.[17] Similarly, a study by Somdatta et al and Dadzi et al showed that around 8% of women believed that OCP could lead to breast cancer.[18,19]

The 11.79% of rural women while 21.24% of urban women were knowledgeable regarding the increased risk of occurrence of breast cancer in case of positive family history of breast cancer or ovarian cancer. Similar results were found in a study by Shankar et al and Dahiya et al, where 50.5% and 59.5% of women were well informed about the increased risk of occurrence in cases of positive family history.[17,20,6] These results show that although there is some amount of knowledge among the general population regarding reproductive risk factors in breast cancer, in-depth knowledge regarding these risk factors is deeply lacking in both the rural and urban regions.

The study found that 11.79% of rural women and 21.24% of urban women had knowledge about the higher risk of

developing breast cancer or ovarian cancer in the case of positive family history. Our research revealed that 18.13% of women in urban areas were aware that consuming alcohol increases the risk of developing breast cancer, while only 11.32% of women in rural regions had this knowledge. It was also found that in comparison to similar results were found in a survey where 41% of women were aware that alcohol consumption was a risk factor for developing breast cancer.[20]

A study conducted on female greenhouse workers in Crete reported that exposure to pesticides for more than 4 hours per day for at least ten years increased the risk of benign breast disease.[21] Given that exposure to chemicals, radiation, and pesticides is considered a risk factor for breast cancer, 20.21%, 13.47%, and 10.88% of urban females, respectively, compared to 8.02%, 16.51%, and 12.26% of rural females, were aware of these concerns. It's worth noting that Sehrawat et al discovered that pesticide use was the most commonly cited risk factor (88.8%) and that fewer than half (36.8%) of participants believed chemicals (packaged food, colorful fruit, and vegetables) could be risk factors for breast cancer.[22] Our study found that 20.21% of urban females and 17% of rural females believed a diet high in fat to be a risk factor for breast cancer. Numerous studies have demonstrated that intake of SFAs and w-3 PUFAs, two different forms of fat, is connected to an increased and lowered risk of breast cancer, respectively.[23]

According to our poll, 16.58% of urban women and only 8.49% of rural women know that being overweight increases the risk of developing breast cancer. In a study, postmenopausal breast cancer risk was positively correlated with each 5 kg/m^2 increase in BMI in 34 studies, including more than 2.5 million women and 23,909 cases of postmenopausal breast cancer.[24] Weight gain and elevated body mass index are linked to abnormal adipokine balance, malfunctioning adipose tissue, improper insulin signalling, and persistent inflammation leading to an increased risk of development of breast cancer.[25]

The current study found that a greater proportion of urban women (49.74%) had knowledge of the lump in the breast as a hallmark of breast cancer, compared to a smaller proportion of rural women (23.58%) who were unaware of the relationship between a lump in the armpit and breast cancer. This result is consistent with the study by Madhu et al, where 90% of participants were knowledgeable about this symptom, and the review study by Pal et al that synthesized data from ten studies reported the highest awareness level for breast lump (62.29%) as a symptom of breast cancer.[12,26]

The most commonly recognized risk factor for breast cancer is breast pain, with 28.3% of rural women and 50.26% of urban women reporting it as such. Similar findings have been reported in previous studies where it was observed that the occurrence of breast pain as a risk

factor ranges from 41% to 73.9%.[6,19,20,22] Conversely, other studies found that breast pain was the predominant symptom in 26.8% of breast cancer cases.[18,23]

According to the present study, a small percentage of women residing in rural areas (5.19%) and urban areas (15.03%) had awareness of nipple discharge being an abnormal symptom, which is consistent with the findings of Dadzi et al, who reported a rate of 8.3%.[18] In comparison, the present study reported a higher rate of rural (15.09%) and urban (35.23%) women who recognized redness, dryness, and flakiness in the nipple area as a potential risk factor, while Dadzi et al recorded this symptom as a risk factor in 8.9% of their participants.[18]

Of those who knew about the BSE to detect early breast cancer, only a tiny percentage, 4.72% of rural and 8.81% of urban women, were practicing it. On the contrary, in one of the studies by Dahiya et al, BSE was regularly practiced at least once a month by 41.4% of the participants.[6,18]

Limitations

This study has some limitations. Knowledge and awareness of breast cancer including BSE among women were found to be low. There is an immediate need for increasing breast cancer awareness among women.

CONCLUSION

In the present study, it can be concluded that participants had insufficient knowledge of the risk factors, signs and symptoms, and early detection methods of breast cancer. Breast self-examination, which is the easiest and most economical method for early detection of breast cancer, was known to only some participants. Given the low awareness of breast cancer, the first and most important requirement is to familiarise them with the risk factors, signs, and symptoms of early detection methods for screening for breast cancer. Compared to urban areas, rural areas must focus more on raising breast cancer awareness, particularly among women with a family history. In this regard, educating healthcare workers and nurses to impart training about BSE is also crucially important. We should make significant policy adjustments to expand screening programs and health education initiatives in the future.

REFERENCES

1. World Health Organization. Cancer. https://www.who.int/health-topics/cancer. Accessed 9 February 2023.

2. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2021;71(3):209-49.

3. Philip SJ. The Hindu. Stage zero breast cancer, 2019. Available at: https://www.thehindu.com/sci-tech/health/stage-zero-breast-cancer/article26173306.ece. Accessed 9 February, 2023.

4. Malvia S, Bagadi SA, Dubey US, Saxena S. Epidemiology of breast cancer in Indian women. Asia Pac J Clin Oncol. 2017;13(4):289-295.

5. Gangane N, Ng N, Sebastian MS. Women's knowledge, attitudes, and practices about breast cancer in a rural district of central India. Asian Pac J Cancer Prev. 2015;16(16):6863-70.

6. Dahiya N, Basu S, Singh MC, Garg S, Kumar R, Kohli C. Knowledge and practices related to screening for breast cancer among women in Delhi, India. Asian Pac J Cancer Prev. 2018;19(1):155-9.

7. Pandey VK, Aggarwal P, Kakkar R. Modified BG Prasad socio-economic classification, update - 2019. Ind J Comm Heal. 2019;31(1):150-2.

8. Paul S, Solanki PP, Shahi UP, Srikrishna S. Epidemiological study on breast cancer associated risk factors and screening practices among women in the holy city of Varanasi, Uttar Pradesh, India. Asian Pac J Cancer Prev. 2015;16(18):8163-71.

9. Johnson RH, Anders CK, Litton JK, Ruddy KJ, Bleyer A. Breast cancer in adolescents and young adults. Pediatr Blood Cancer. 2018;65(12):e27397.

10. Khalid A, Hassnain S, Gakhar H, Khalid B, Zulfiqar F, Wahaj A. Breast cancer among young girls: a KAP study conducted in Lahore. Int J Sci Rep. 2018;4(6):166.

11. Sahu D, Subba S, Giri P. Cancer awareness and attitude towards cancer screening in India: A narrative review. J Fam Med Prim Care. 2020;9(5):2214.

12. Madhukumar S, Thambiran UR, Basavaraju B, Bedadala MR. A study on awareness about breast carcinoma and practice of breast self-examination among basic sciences' college students, Bengaluru. J Fam Med Prim Care. 2017;6(3):487-90.

13. Bala DV, Gameti H. An educational intervention study of breast self examination (BSE) in 250 women beneficiaries of urban health centers of west Zone of Ahmedabad. Heal J Indian Assoc Prev Soc Med. 2011;2(2):46-49.

14. Atashgaran V, Wrin J, Barry SC, Dasari P, Ingman WV. Dissecting the biology of menstrual cycle-associated breast cancer risk. Front Oncol. 2016;6:267.

15. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50 302 women with breast cancer and 96 973 women without the disease. Lancet. 2002;360(9328):187-95.

16. Khokhar A. Level of awareness regarding breast cancer and its screening amongst Indian teachers. Asian Pac J Cancer Prev. 2009;10(2):247-50.

17. Paunikar AP, Khadilkar HA, Doibale MK, Kuril BM. Knowledge, attitude and practices of women towards breast cancer in the field practice area of urban health training centre, Aurangabad, Maharashtra. Int J Commu Med Public Health. 2017;4(10):3659.

18. Dadzi R, Adam A. Assessment of knowledge and practice of breast self-examination among reproductive age women in Akatsi South district of Volta region of Ghana. PloS One. 2019;14(12):e0226925.

19. Somdatta P, Baridalyne N. Awareness of breast cancer in women of an urban resettlement colony. Indian J Cancer. 2008;45(4):149-53.

20. Madhu B, Shankar P. Awareness and screening behaviors of breast cancer among urban women in Mysuru, India- need for breast health education program. Int J Community Med Public Health. 2017;4(8):2967.

21. Bassil KL, Vakil C, Sanborn M, Cole DC, Kaur JS, Kerr KJ. Cancer health effects of pesticides: systematic review. Can Fam Physician Med Fam Can. 2007;53(10):1704-11.

22. Sehrawat JS, Garima, Mor S. Knowledge, beliefs and practices about breast cancer and its self-examination procedure among urban and rural women of district Gurdaspur, Punjab, India: a cross sectional study. Int J Community Med Public Health. 2016;4(1):120.

23. Khodarahmi M, Azadbakht L. The association between different kinds of fat intake and breast cancer risk in women. Int J Prev Med. 2014;5(1):6-15.

24. Picon-Ruiz M, Morata-Tarifa C, Valle-Goffin JJ, Friedman ER, Slingerland JM. Obesity and adverse breast cancer risk and outcome: Mechanistic insights and strategies for intervention. CA Cancer J Clin. 2017;67(5):378-97.

25. Naaman SC, Shen S, Zeytinoglu M, Iyengar NM. Obesity and breast cancer risk: the oncogenic implications of metabolic dysregulation. J Clin Endocrinol Metab. 2022;107(8):2154-66.

26. Pal A, Taneja N, Malhotra N, Shankar R, Chawla B, Awasthi AA, et al. Knowledge, attitude, and practice towards breast cancer and its screening among women in India: A systematic review. J Cancer Res Ther. 2021;17(6):1314-21.