

# Breast Self-examination Practice among Medical Postgraduate Female Students of Southern Odisha: A Cross-sectional Study

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## ABSTRACT

**Introduction:** Breast cancer is on the rise among females in India. Breast Self-Examination (BSE) is an easy to learn, self-monitoring screening modality which can be done in utmost privacy. A proportionate increase in incidence of breast cancer is now reported among urban educated females. Even doctors neglect their own health and are the at-risk population for Non Communicable Diseases (NCDs).

**Aim:** To assess the knowledge, attitude and practice of postgraduates on BSE.

**Materials and Methods:** This was a web-based cross-sectional analytical study conducted between August 2021-October 2021 at M.K.C.G. Medical College, Berhampur, Odisha, India. Study population included 100 female postgraduate students. A predesigned structured questionnaire was prepared by thorough review of literature and was validated by experts. Data was collected on knowledge, attitude and practice of BSE from the study participants using Google form. Scoring was done and correlation was found out between the parameters. Chi-square test and the Fischers-exact test was used for statistical analysis.

**Results:** About 82 respondents completed the form. About 66 (80.48%) were in age group of 25-29 years, 7 (8.53%) had family history of breast cancer, 8 (9.75%) had discovered abnormality while practicing BSE. The median scores in knowledge of breast cancer and BSE was 36 and 17 respectively. The median scores of attitude and practice were 42 and 13 each. Spearman's rank correlation between knowledge and attitude was positively correlated ( $r=0.324$ ,  $p=0.003$ ), attitude and practice was positively correlated ( $r=0.317$ ,  $p=0.004$ ) and knowledge and practice was not correlated ( $r=0.173$ ,  $p=0.120$ ). No significant difference in practice was found for participants with family history of breast cancer ( $p=0.353$ ) and personal history of breast abnormality ( $p=0.672$ ) and those who had no history. However a significant association was found between knowledge on frequency of BSE and monthly practice of BSE ( $p=0.003$ ).

**Conclusion:** In this study 50% of the participants did not know about the age of starting BSE as 20 years. All the steps were not followed by those who performed BSE. The most common reason for not practicing BSE was lack of time. Knowledge-practice gaps exist among the future professionals.

**Keywords:** Breast cancer, Early detection of cancer, Non communicable diseases, Professional practice gaps

## INTRODUCTION

The NCDs account for 63% of all deaths in India [1]. The number of deaths due to cancer is also increasing now-a-days. Breast cancer is the most common cancer among females in India. It is the most frequent cancer to be diagnosed in women with age standardised incidence rate of 25.8 per 1 lakh population and age standardised mortality rate of 13.3 per 1 lakh population in India [2]. The risk of breast cancer in woman is 0.4%, 1.5%, 2.4% and 3.6% between 30-40 years, 40-50 years, 50-60 and 60-70 years respectively [3].

Screening remains the most crucial step for early detection and diagnosis of breast cancer. Screening modalities like regular BSE, Clinical Breast Examination (CBE), mammography and ultrasound play a very important role in early detection of breast cancer and thereby reducing mortality. BSE is an easy to learn, quick, non invasive self-monitoring technique which can be done in utmost privacy unlike clinical examination which requires hospital visit and specialist consultation. Mammography and ultrasound are quite expensive. BSE helps women to be familiar with their breast and is helpful in detecting any abnormal changes at the earliest [4].

There is a rise in the number of patients diagnosed with breast cancer at young age [3]. A proportionate increase in incidence of breast cancer is now reported among urban educated females. This could be because of late marriage, late first child birth, lesser number of children and relatively shorter periods of breastfeeding among urban educated women [2]. As the risk factors are accumulating, breast cancer incidence may continue to rise in the coming years. BSE can be a very effective tool for early detection of cancer. However, it is not frequently practiced or has been practiced incorrectly for

several reasons [5]. The practice of BSE among the female medical students was found to be very low (23%) [6]. The practice of BSE in India, varies from 0-52% [7].

There are no studies on BSE practice among medicos in Southern Odisha, India. As doctors, they are aware about BSE, but still they are found to neglect their own health. Therefore, this study was done among postgraduate female doctors to assess their knowledge, attitude and practice of BSE, to find out the correlation between knowledge, attitude and practice and to determine any association between BSE practice with family history of breast cancer and personal history of breast abnormality.

## MATERIALS AND METHODS

It was a web-based cross-sectional analytical study conducted between August 2021 to October 2021 at M.K.C.G. Medical College and Hospital, Berhampur, Odisha, India. Ethical clearance was obtained from Institutional Ethics Committee (IEC) (Review Board Approval Number 848). The study population included all female postgraduate students from various departments of the institution. There were 100 female postgraduate students during the study period at the institution.

**Inclusion criteria:** All female postgraduate students from various departments of the institution who gave consent and filled the form completely were included in the study.

**Exclusion criteria:** Those who did not fill up the form were excluded from the study.

**Sample size calculation:** Non probability purposive sampling method was applied.

The participants were explained briefly about the purpose and importance of the study over mobile phone calls. They were also informed that their individual particulars would be kept totally confidential and anonymous.

### Study Procedure

A pre-designed structured questionnaire was developed by thorough review of literature [4,5,8-12] and was validated by public health experts. The questionnaire had five sections [Annexure-1]: socio-demographic and general information, knowledge of breast cancer, knowledge on BSE, attitude on BSE, practice of BSE. The questionnaire comprised of 49 questions on knowledge, attitude and practice; 20 on knowledge of breast cancer, 11 on knowledge of BSE, nine on attitude, and nine on practice. A score of "2" was used for correct responses, "1" for don't know, and "0" for incorrect response in assessment of knowledge. The total maximum score for knowledge of breast cancer was 40 and for knowledge on BSE was 22. A 5-point Likert scale (Strongly agree/Agree/Neutral/Disagree/Strongly disagree) with scores of "5," "4," "3," "2," and "1" respectively was used for assessing attitude. The total maximum score for attitude was 45. A score of "2" for correct practice and "0" for no practice was used to assess practice among study participants. The total maximum score for practice was 18. Those participants who scored more than 50<sup>th</sup> percentile were considered to have good knowledge, attitude and practice. Google form was used as data collection tool for the study. The link of the questionnaire was sent to all the participants through Whatsapp Application. Data were collected anonymously from the participants. A total of 82 participants filled the form completely.

### STATISTICAL ANALYSIS

The collected data was compiled, formatted, and analysed using requisite statistical tests/software like Microsoft Excel and IBM Statistical Package for the Social Sciences (SPSS) statistics 2021. Median scores were calculated for each of the parameters. Data was analysed using frequencies and percentages. Chi-square test was used to test the association taking  $\alpha=5\%$  and at 95% Confidence Interval. Fischers-exact test was used when the cell value was less than 5. Spearman's rank correlation coefficient (rho) test was used to see correlation between knowledge, attitude and practice.

### RESULTS

The google form questionnaire link was sent to all the female postgraduate students. Out of 100, 82 participants filled up the form as required. The mean age of the participants was 30.4±3.41 years. Majority that is 66 (80.48%) participants were in the age group of 25-29 years, 45 (54.87%) of them were married, 80 (97.56%) belonged to urban areas and 74 (90.24%) were Hindus. About 48 (58.54%) were in second year and 34 (41.46%) were in first year (during the study period only two batches were present). Family history of breast cancer was there in 7 (8.53%) participants; most frequently affected relative being aunt. Some abnormality in the breast was detected among 8 (9.75%) participants who were practicing BSE. Most common source of information for participants was from books 82 (100%) and lectures 73 (89.02%) followed by hospital 69 (84.14%), media 55 (67.07%) and friends 51 (62.19%). The most common source of motivation for postgraduates was advise from health personnel 53 (64.63%) followed by family history of breast cancer 11 (13.41%), internet 7 (8.53%), family 2 (2.43%) and peer 1 (1.21%). Some other sources of motivation as stated by them was the increasing number of cases of breast cancer and "risk of cancer in women". About 54 (65.85%) students had tried convincing their friends and family members and 61 (74.39%) had advised patients to perform BSE.

Most of the participants, 75 (91.46%) knew that breast cancer is curable and 81 (98.78%) knew that Cancer Breast could occur

even without a family history. About 78 (95.12%) were aware about the possibility of having cancer in the other breast if she had cancer in one breast, however 2 (2.43%) didn't know about it. All knew that presence of skin irritation and dimpling was a symptom of cancer. However only 10 (12.20%) opined that a painful soft lump with smooth edge could be cancer. More than 80% of the participants were well aware of the risk factors for breast cancer. However 17 (20.73%) didn't know that intake of alcohol could be a risk factor for breast cancer. All the participants knew that cancer of the breast could be detected by BSE, clinical examination or by mammography [Table/Fig-1].

Questions	Yes n (%)	No n (%)	Don't know n (%)
<b>Knowledge on signs and symptoms</b>			
A lump that is painless hard with uneven edge	79 (96.34)	3 (3.66)	-
A lump that is painful soft with smooth edge	10 (12.20)	69 (84.15)	3 (3.65)
Lump present in underarm area	70 (85.37)	9 (10.98)	3 (3.65)
Presence of skin irritation and dimpling	82 (100)	-	-
Pain in nipple, discharge from nipple, nipple inversion	72 (87.80)	10 (12.20)	-
<b>Knowledge on risk factors</b>			
Family history of breast cancer/ Inheritance of abnormal gene	82 (100)	-	-
Advancing age	79 (96.34)	2 (2.44)	1 (1.22)
Chemicals/Radiation/X-rays	79 (96.34)	-	3 (3.66)
Hormonal Replacement therapy	70 (85.37)	11 (13.1)	1 (1.22)
Overweight/Obesity	77 (93.90)	4 (4.88)	1 (1.22)
Intake of alcohol	55 (67.07)	10 (12.20)	17 (20.73)
Smoking	67 (81.71)	9 (10.98)	6 (7.31)
Late pregnancy	71 (86.58)	8 (9.76)	3 (3.66)
Not breast feeding infant	77 (93.90)	4 (4.88)	1 (1.22)
Sedentary lifestyle	76 (92.68)	5 (6.10)	1 (1.22)
Prolonged use of oral contraceptive	72 (87.80)	10 (12.20)	-
<b>Methods of detection of breast cancer</b>		<b>N</b>	<b>Percentage</b>
Breast self examination	82	100	
Clinical breast examination	82	100	
Mammography	82	100	
Ultrasound	57	69.51	
CT scan	40	48.78	
MRI	57	69.51	

**[Table/Fig-1]:** Knowledge on signs and symptoms, risk factors and methods of detection of Breast Cancer.

All the participants stated that BSE was useful for early detection of cancer and about 81 (98.78%) stated that it was recommended for all women. Less than 50% participants knew that BSE can be done during pregnancy and lactation. The correct method of palpation was known to all. The benefits of BSE as opined by the respondents were early detection of cancer 65 (79.26%) and detection of abnormal breast changes 68 (82.92%) [Table/Fig-2].

Regarding frequency of BSE, 44 (53.65%) knew that it should be done monthly. The fact that BSE is done a week after period was known to 60 (73.17%) participants. However 22 (26.83%) didn't know about the best time for doing BSE. Out of the 82 participants, 41 (50%) knew that BSE should be started from 20 years of age, 22 (26.82%) from 30 years and 19 (23.17%) from puberty.

Although more than 50% of participants had good attitude towards practice of BSE, only about 60 (73.17%) strongly agreed that they should go for medical consultation in case of any abnormality on BSE [Table/Fig-3].

Questions	Yes n (%)	No n (%)	Don't know n (%)
Do you know that BSE is useful for early detection of breast cancer?	82 (100)	-	-
Is BSE recommended for all women including you?	81 (98.78)	1 (1.22)	-
Is it done in circular motion covering whole breast?	80 (97.56)	1 (1.22)	1 (1.22)
BSE is done during pregnancy and lactation	36 (43.90)	31 (37.81)	15 (18.29)
BSE is done during menopause	70 (85.37)	7 (8.53)	5 (6.10)
A slippery and wet skin during bath facilitates BSE	25 (30.49)	39 (47.56)	18 (21.95)
<b>How is BSE done?</b>		<b>N</b>	<b>Percentage (%)</b>
One finger palpation		-	-
Palm and three finger palpation		82	100
Don't know		-	-
<b>Benefits of BSE</b>			
Early detection of breast cancer		65	79.26
Detection of abnormal changes in the breast		68	82.92
To be familiar with breast texture		28	34.14
A good breast exercise		12	14.63

[Table/Fig-2]: Knowledge on BSE.

Questions	Responses	N (%)
I think BSE is very important for early detection of breast cancer.	Strongly agree	48 (58.54)
	Agree	32 (39.02)
	Neutral	-
	Disagree	-
	Strongly disagree	2 (2.44)
I think BSE should be done regularly.	Strongly agree	43 (52.43)
	Agree	31 (37.81)
	Neutral	3 (3.66)
	Disagree	4 (4.88)
	Strongly disagree	1 (1.22)
We should discuss freely about any discomfort in breast with parents/friends/doctor.	Strongly agree	59 (71.95)
	Agree	21 (25.61)
	Neutral	-
	Disagree	-
	Strongly disagree	2 (2.44)
We must immediately go for medical consultation in case there is any discomfort/lump in breast.	Strongly agree	60 (73.17)
	Agree	19 (23.17)
	Neutral	2 (2.44)
	Disagree	-
	Strongly disagree	1 (1.22)
BSE is unpleasant and so one can't do it regularly.	Strongly agree	-
	Agree	2 (2.44)
	Neutral	11 (13.41)
	Disagree	33 (40.24)
	Strongly disagree	36 (43.90)
BSE should be done only when there is discomfort.	Strongly agree	-
	Agree	2 (2.44)
	Neutral	1 (1.22)
	Disagree	45 (54.88)
	Strongly disagree	34 (41.46)
There is no family history of breast cancer so no need to practice BSE.	Strongly agree	-
	Agree	2 (2.44)
	Neutral	-
	Disagree	26 (31.71)
	Strongly disagree	54 (65.85)

I think BSE is time consuming.	Strongly agree	-
	Agree	-
	Neutral	4 (4.88)
	Disagree	36 (43.90)
We should encourage others for performing BSE.	Strongly disagree	42 (51.22)
	Strongly agree	60 (73.17)
	Agree	21 (25.61)
	Neutral	1 (1.22)
	Disagree	-
Strongly disagree	-	

[Table/Fig-3]: Attitude towards BSE.

The BSE was practiced by 62 (75.61%) participants and out of them 19 (23.17%) did it monthly. It was performed in front of the mirror by 44 (53.66%) students. About 27 (32.93%) practiced BSE by lying down and 67 (81.71%) in standing/sitting position [Table/Fig-4]. Out of those who did not practice BSE, the most common reason for not practicing was lack of time 9 (45%) followed by absence of signs and symptoms 7 (35%). About 2 (10%) said it is because of lack of knowledge and forgetfulness.

Questions	Responses	N (%)
1. Do you practice BSE?	Yes	62 (75.61)
	No	20 (24.39)
2. How often do you practice BSE? Monthly	Yes	19 (23.17)
	No	63 (76.83)
3. Do you practice BSE by looking at the breasts in the mirror with your shoulders straight and your arms on your hips?	Yes	44 (53.66)
	No	38 (46.34)
4. Do you raise your arms and look for the same changes?	Yes	67 (81.71)
	No	15 (18.29%)
5. Do you lie down for BSE?	Yes	27 (32.93)
	No	55 (67.07)
6. Do you feel your breasts while standing/sitting?	Yes	67 (81.71)
	No	15 (18.29)
7. Do you feel your breasts by using right hand for left breast and vice versa?	Yes	75 (91.46)
	No	7 (8.54)
8. Do you palpate from your collarbone to the top of your abdomen, and from your armpit to your cleavage?	Yes	57 (69.51)
	No	25 (30.49)
9. What do you inspect during BSE? a. Change in size and shape of breast b. Dimpling, puckering, bulging of skin c. Redness, soreness, rash, unusual swelling d. Change in position/inversion of nipple e. Abnormal discharge from nipple(watery, milky, yellow fluid, blood) f. Underarm swelling or enlarged lymph nodes g. Don't know	Yes	79 (96.34)
	No	3 (3.66)

[Table/Fig-4]: Practice of BSE.

Median scores of knowledge on breast cancer and BSE, attitude on BSE and practice on BSE were 54, 42 and 13, respectively [Table/Fig-5].

Scores	Median value
Knowledge on breast cancer	36
Knowledge on breast-self examination	17
Knowledge on breast cancer and BSE	54
Attitude on BSE	42
Practice of BSE	13

[Table/Fig-5]: Median scores of knowledge, attitude and practice.

Proportion of individuals with knowledge on breast cancer, attitude and practice scores >50<sup>th</sup> percentile were 43.9%, 37.8% and 45.1%, respectively [Table/Fig-6].



>50 <sup>th</sup> percentile score	N	%
Knowledge on breast cancer	36	43.9
Knowledge on BSE	40	48.8
Total knowledge	29	35.4
Attitude on BSE	31	37.8
Practice of BSE	37	45.1

**[Table/Fig-6]:** Proportion of individuals with knowledge, attitude and practice scores >50<sup>th</sup> percentile.

A positive correlation was found between knowledge and attitude, and also between attitude and practice of BSE [Table/Fig-7].

No significant association was found between family history of breast cancer and practice of BSE ( $p=0.353$ ) and between abnormality detected during BSE earlier and practice of BSE ( $p=0.672$ ) [Table/Fig-8].

Correlation between scores	Spearman's rank correlation coefficient	p-value	Inference
Knowledge BSE and attitude	+0.324	0.003	Positive correlation
Knowledge BSE and practice	+0.173	0.120	Not correlated
Attitude and practice	+0.317	0.004	Positive correlation

**[Table/Fig-7]:** Correlation between knowledge, attitude and practice of BSE.

Variables	Practice of BSE		Chi-square statistics	
	Yes	No		
Family h/o breast cancer	Yes	4 (57.14%)	3 (42.85%)	$\chi^2=1.415$ $p\text{-value}=0.353$
	No	58 (77.33%)	17 (22.66%)	
Discovered any abnormality during BSE	Yes	7 (87.5%)	1 (12.5%)	$\chi^2=0.680$ $p\text{-value}=0.672$
	No	55 (74.32%)	19 (25.67%)	

**[Table/Fig-8]:** Association between family h/o breast cancer to practice of BSE and between abnormality discovered during BSE to practice of BSE.  
\*Fischers-exact test was applied

A significant association was found between knowledge on frequency of BSE and monthly (regular) practice of BSE ( $p=0.003$ ) [Table/Fig-9].

Variable	Practice of BSE		Chi-square statistics	
	Monthly	Not monthly		
Knowledge on frequency of BSE	Monthly	16 (36.36%)	28 (63.63%)	$\chi^2=9.283$ $p\text{-value}=0.003$
	Not monthly	3 (7.89%)	35 (92.10%)	

**[Table/Fig-9]:** Association between knowledge on frequency of BSE and practice.  
\*Fischers-exact test was applied

## DISCUSSION

The BSE is a cost effective screening method for early detection of cancer of the breast especially in developing countries like India [13, 14]. The present study was conducted to assess the knowledge, attitude and practice of BSE among postgraduate medical students. Majority of the participants were in the age group of 25-29 years. The right age to start BSE is 20 years [15]. As medical professionals they can play a major role in spreading awareness about BSE in the community.

In present study, the source of information for the participants was mostly from books and lectures. This finding was similar to a study of breast cancer awareness among nursing students where the most common source of information was books (52%) [16]. This finding was also comparable to a study conducted by Joy N et al., among undergraduate medical students at Mangalore, India where the source of information was lecture for majority of the participants [10].

The median score on knowledge of breast cancer in this study was 36 (total score on breast cancer knowledge=40) and 36 (43.9%)

of participants scored more than 50<sup>th</sup> percentile. As the study participants were medical students, they should be aware of the risk factors, signs and symptoms of breast cancer. The median score of knowledge on BSE was 17 (total score=22) and 40 (48.8%) of participants scored more than 50<sup>th</sup> percentile. Around 50% of the participants were aware that the age of starting BSE was 20 years. The fact that BSE could be done during pregnancy and lactation was known to 36 (43.90%) of the participants. The fact that a slippery and wet skin during bath facilitates BSE was known to 25 (30.49%) participants in present study whereas it was 43.3% in a study among undergraduates in Telangana, Andhra Pradesh, India [4]. Only 44 (53.65%) participants were aware that BSE should be done monthly. This result was comparable to a study conducted among undergraduates in Telangana, Andhra Pradesh India, (50.9%) [4]. The frequency of BSE was 69.47% in a study among undergraduates in Mangalore, India [10] and 24% among health professionals at Maharashtra, Nagpur [17].

The best time to do BSE is a week after period was known to majority of the participants. However, it was known to only 36.7% of the nursing staff at Bangalore [18].

Though the participants had good knowledge on BSE, they were not completely aware about certain aspects of BSE inspite of being medical students.

The median score on attitude was 42 (total score=45) and about 31 (37.8%) of participants had scored more than 50<sup>th</sup> percentile. A study conducted among IT professionals showed 68% to be having poor attitude with mean score of 27.07±8.14 [5]. The attitude among postgraduates medical students in this study was better than Indian dental students as observed by Doshi D et al., [7]. The junior doctors should be aware about the increasing trend of breast cancer cases.

The median score on practice was 13 (total score=18) and about 37 (45.1%) of participants scored more than the 50<sup>th</sup> percentile. Similar findings were observed in group of Indian dental students (mean score=12.64±5.92) [7] and IT students (mean score=19.11±5.08) [5]. In the present study, about 45.1% of the participants were doing good practicing of BSE. This was in contrast to the findings in a study conducted among health professionals at Nagpur, Maharashtra (76%) [17], staff nurses at Bangalore, India (75.6%) [18] and among physiotherapy students at Navi Mumbai [11]. In most of the studies about one-fourth of healthcare staffs did not practice BSE. Out of the 62 participants who practiced BSE, only 19 (23.17%) did it regularly, that is once a month. A study conducted among health professionals at Nagpur, Maharashtra also showed similar results [17]. This was also comparable to a study conducted among physiotherapy students where 25.8% of them practiced BSE regularly [11]. In a study conducted among female health workers in Ethiopia, the magnitude of regular breast self-examination practice was 32.6% [14] and at Ghana only 8.1% of the students performed BSE monthly as recommended [19]. Monthly practice of BSE among nurses in Ethiopia was 16.4% [20]. In a study among nurses and physicians at Turkey, 15% nurses and 34% physicians practiced BSE regularly every month [21]. Likewise, in a study by Haji-Mahmoodi M et al., it was stated that most healthcare practitioners (63-72%) did not practice BSE and only 6% of them performed it monthly [22]. All these results suggest that even though the participants had good knowledge and attitude, they were not practicing it regularly and correctly.

The main reason for not practicing BSE in present study was lack of time and absence of any sign/symptom. This finding was similar to a study by Kawalkar AN and Koparkar AR [17] and Ansari S et al., (50%) [18]. The practice of doing BSE regularly and correctly can be imbibed in the study participants by conducting sensitisation campaigns regularly.

S. No.	Author's name and year	Place of study	Number of subjects	Parameters assessed	Conclusion
1.	Reddy SB and Acharya JP 2020 [4]	Telangana	381	Knowledge on breast cancer and BSE	Majority of the respondents had adequate knowledge about various aspects of breast cancer, knowledge about important risk factors was low. When it came to awareness about BSE, the knowledge about right technique, position and time were found to be scarce.
2.	Kalliguddi S et al., 2019 [5]	Bangalore	356	Knowledge, Attitude and Practice of BSE	Knowledge and attitude were not correlated, attitude and practice were not correlated; but knowledge and practice were extremely correlated. This study highlights the need for educational programs to create awareness regarding breast cancer and its occurrence, risk factors, screening including BSE, symptoms, need for early help-seeking practices, diagnosis, and treatment modalities.
3.	Doshi D et al., 2012 [7]	Hyderabad	203	Knowledge, attitude, and practice (KAP) regarding BSE	The knowledge and practice of BSE was quite low. The study also highlights the need for educational programs to create awareness regarding regular breast cancer screening behaviour.
4.	Joy N et al., 2018 [10]	Mangalore	95	Knowledge on breast cancer and BSE	All the participants had good knowledge about breast cancer and 78.94% had good overall awareness about BSE. It was also observed that the overall knowledge on breast cancer improved as the students progressed to advanced levels of their medical training. Better and more effective health education programmed will be required to enlighten the healthcare professionals as well as the general public regarding the risk factors, early detection and management of breast cancer.
5.	Parle J and Gupta S, 2020 [11]	Navi Mumbai, Maharashtra	380	Knowledge about Breast Cancer, KAP of BSE	Students had moderate knowledge, attitude was excellent but practice was alarmingly low. Only (25.8%) of the respondents reported to perform BSE monthly. The Indian population would be greatly benefited if healthcare providers would be well versed in promoting breast cancer education.
6.	Shallo SA and Boru JD, 2019 [14]	Western Ethiopia	379	Knowledge attitude and practice of BSE	BSE practice was low and it was associated with different factors. There was also a gap in knowledge and awareness among the female healthcare professionals towards BSE, and even those who had sufficient knowledge were not practicing BSE because of negligence. Short-term training on breast cancer and BSE should be better organised by the hospital administrator.
7.	Tansushree B and Magendran J, 2020 [16]	Chennai	150	Knowledge on breast cancer and attitude towards its risk factors	Study participants did not have adequate knowledge on risk factors and symptoms of breast cancer. The implications of this study are to emphasise the need to teach nursing students breast cancer awareness and detection of breast cancer in the early stage their undergraduate courses.
8.	Kawalkar AN and Koparkar AR, 2017 [17]	Nagpur, Maharashtra	400	Knowledge, attitude and practice on BSE	The study showed lack of knowledge, attitude and practice of BSE among health professionals. There is strong need of intervention in health professionals in making them highly aware of BSE, to improve knowledge and making BSE a universal practice among health professionals first, so that they understand, practice and transfer the importance of practicing BSE to general population.
9.	Ansari S et al., 2020 [18]	Bangalore	90	Knowledge and practice of effective BSE.	The study indicates that nurses had inadequate knowledge about BSE. Practice of BSE was high but very few practiced it effectively. Educational interventions have to be developed and delivered for training the nurses to improve knowledge, practice and skills to perform BSE.
10.	Jemebere W, 2018 [20]	South Ethiopia	180	Practice of BSE and associated factors	Practice of BSE is encouraging, it was not done regularly, monthly and a week after menses with unsatisfactory result in position and technique of BSE by most of nurses. The hospital and ministry of health of Ethiopia have to give regular education and training on BSE.
11.	Cavdar I et al., 2007 [21]	Turkey	350	Attitudes and practices related to BSE	The finding that most physicians and nurses did not regard BSE as important suggests that healthcare professionals need to change their attitudes and behaviours regarding BSE and continuing education programs should focus more on it.
12.	Haji-Mahmoodi M et al., 2002 [22]	Iran	410	Knowledge of breast cancer, knowledge, attitudes, practice of BSE	The knowledge and behaviours of female healthcare workers concerning breast cancer is relatively poor and it needs to be improved. Considering the role that healthcare workers may play in communicating health behaviours to the general public, planning health education interventions for this group of females is essential.
13.	Present study, 2022	Berhampur, Odisha	82	Knowledge, attitude, practice of BSE	Knowledge-practice gaps exist. Knowledge on BSE was not adequate. All of them knew that BSE is important for early detection of cancer. However, not all of them knew about frequency and age of starting BSE. One fourth of the total participants were not practicing BSE and the most common reason was lack of time. Only 23.2% practiced BSE monthly. Breast self-examination training sessions and sensitisation campaigns can be done yearly at medical colleges for removing barriers in practice from an early age.

[Table/Fig-10]: Comparison of similar studies [4,5,7,10,11,14,16-18,20-22].

A positive correlation was found between knowledge of BSE and attitude ( $r=0.324$ ,  $p=0.003$ ) and between attitude and practice of BSE ( $r=0.317$ ,  $p=0.004$ ). This suggests that doctors were well aware of breast cancer and BSE and are ready to follow recommendations, and any well-designed health intervention like annual campaigns for sensitisation on BSE, will be well accepted. A positive correlation ( $r=0.176$ ;  $p=0.001$ ) between knowledge and attitude was also found in a study by Parle J and Gupta S among physiotherapy students [11]. Knowledge and practice was positively correlated in studies by Kalliguddi S et al, and Doshi D et al., [5,7].

No significant difference was found between practice of BSE and presence of family history of breast cancer ( $p=0.353$ ). The reason for not practicing BSE may be lack of time as stated by the respondents. Similar findings were found in a study among physicians and nurses in Turkey [21]. This finding was in contrast to a study in Ethiopia where family history of breast cancer was significantly associated with BSE practice (AOR=5.1 95% CI (2.33, 8.14)) [20].

The knowledge of frequency of BSE and practice was found to be significantly associated ( $p=0.003$ ). This suggests that the participants are strongly motivated. A strong association ( $\chi^2=119.063$ ,  $p=0.0001$ ) was found between knowledge of BSE and regular practice of BSE in a study by Parle J and Gupta S [11]. Comparison of similar studies has been given in [Table/Fig-10] [4,5,7,10,11,14,16-18,20-22].

### Limitation(s)

This sample was limited to postgraduate medical students and was skewed highly towards urban educated well to do females and thus cannot be generalised to general population. It was a cross-sectional survey with no follow-up. Hence, high chances of "recall or memory bias" and "selection bias" were there in the study. There is a possibility of "social desirability bias" as the practices were not observed but self-reported. As there was no internationally recognised standardised tool to assess BSE, the questionnaire formation was solely dependent on literature review. This might

have resulted in variation of measurements. It also limits comparison of the study findings with other studies. Use of mixed methodology could have strengthened the findings of this study.

## CONCLUSION(S)

The knowledge about breast cancer, its risk factors and BSE among the postgraduate students was not adequate. All the participants knew that BSE was very useful for early detection of breast cancer but about 50% did not know about the age of starting BSE as 20 years and 76.83% did not know that it should be done monthly. Only about 23.2% practiced BSE monthly. About one fourth of the total participants were not practicing BSE and the most common reason was lack of time. Knowledge-practice gaps also exist among the future doctors. This study can be done taking all the female medical students of the state for generating a robust evidence. Breast self-examination training sessions and sensitisation campaigns can be done annually at medical colleges for removing barriers in practice from an early age. Follow-up studies can be planned after training sessions and sensitisation campaigns to emphasise the importance of BSE among medicos.

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## ANNEXURE-1

### Breast Self-Examination (BSE) practice among female Postgraduate Students in a medical college of Southern Odisha: A Cross-sectional study.

This questionnaire intends to generate awareness regarding BSE. It has five sets of questions. Please fill out the form completely and give information on your own knowledge and experience. The information will be kept strictly confidential. Kindly spare some valuable time. It will take around 10-15 minutes.

Do you want to participate in the survey?

- a. Yes                                      b. No

### I. Socio-demographic and General Information

- Age (years):  
a) 20-24                      b) 25-29                      c) 30-34                      d) >=35
- Marital status:  
a) Unmarried                      b) Married                      c) Separated
- Religion:  
a) Hindu                      b) Muslim                      c) Christian                      d) others
- Residence:  
a) Rural                      b) Urban

5. Year of study:
    - a) PG First year                      b) PG Second year
    - c) PG Final year
  6. Has any member of your family been diagnosed with breast cancer?
    - a) Yes                      b) No
  7. a. If, yes what is her relationship with you?
    - a) mother      b) sister              c) aunt              d) cousin
    - e) others
  7. b. If others, kindly specify \_\_\_\_\_
  8. a. Source of information for BSE. Tick all that apply
    - a) Books
    - b) Media (Internet, TV)
    - c) Hospital
    - d) Lecture
    - e) Friends
    - f) Others
  - b. If others, please specify
  9. a. What motivates you to perform BSE?
    - a) Family history of breast cancer
    - b) Advised by health personnel
    - c) Internet
    - d) Peer
    - e) Family
    - f) Others
  - b. If others, please specify
  10. Have you ever discovered any abnormality while practising BSE?
    - a) Yes                                      b) No
  11. Have you tried earlier in convincing your friends and family members to perform BSE?
    - a) Yes                                      b) No
  12. Did you ever advise any patient on performing BSE?
    - a) Yes                                      b) No
5. Risk factors for breast cancer
    - a) Family history of breast cancer/inheritance of abnormal genes
      - a) Yes              b) No              c) Don't know
    - b. Advancing age
      - a) Yes              b) No              c) Don't know
    - c. Chemicals/Radiations/X-ray
      - a) Yes              b) No              c) Don't know
    - d. Hormones (Hormone Replacement Therapy)
      - a) Yes              b) No              c) Don't know
    - e. Overweight/Obesity
      - a) Yes              b) No              c) Don't know
    - f. Alcohol
      - a) Yes              b) No              c) Don't know
    - g. Smoking
      - a) Yes              b) No              c) Don't know
    - h. Late pregnancy
      - a) Yes              b) No              c) Don't know
    - i. Not breastfeeding infant
      - a) Yes              b) No              c) Don't know
    - j. Sedentary lifestyle
      - a) Yes              b) No              c) Don't know
    - k. Prolonged use of oral contraceptives
      - a) Yes              b) No              c) Don't know
  6. Methods of breast cancer detection (Tick all that apply)
    - a) Breast self examination
    - b) Clinical breast examination
    - c) Mammography
    - d) Ultrasound
    - e) Magnetic Resonance Imaging (MRI)
    - f) Computed Tomography (CT) scan

## II. Knowledge of Breast Cancer

1. Is breast cancer curable?
  - a) Yes              b) No              c) Don't know
2. Can breast cancer happen without family history of such cancers?
  - a) Yes              b) No              c) Don't know
3. If one has breast cancer in one breast, can she have cancer in another part of the same breast or in the other breast?
  - a) Yes              b) No              c) Don't know
4. Signs of breast cancer?
  - a. Lump that is painless, hard with uneven edges
    - a) Yes              b) No              c) Don't know
  - b. Lump that is painful, soft with smooth edges
    - a) Yes              b) No              c) Don't know
  - c. Lump in underarm area
    - a) Yes              b) No              c) Don't know
  - d. Skin irritation and dimpling
    - a) Yes              b) No              c) Don't know
  - e. Nipple pain or inversion or discharge
    - a) Yes              b) No              c) Don't know

## III. Knowledge of BSE (Breast Self Examination)

1. Do you know that BSE is a useful tool for early detection of breast cancer?
  - a) Yes              b) No              c) Don't know
2. Is BSE recommended for all women including you?
  - a) Yes              b) No              c) Don't know
3. At what age should BSE be started?
  - a) From puberty                      b) From 20 years
  - c) From 30 years                      d) After menopause
  - e) Don't know
4. Frequency of BSE
  - a) Daily              b) Weekly              c) Monthly              d) 3 monthly
  - e) 6 monthly              d) Yearly              e) Don't know
5. What is the best time to do BSE?
  - a) during menstrual flow              b) a week after period
  - c) during pregnancy                      d) during breastfeeding
  - e) Don't know
6. BSE is done during pregnancy and lactation.
  - a) Yes              b) No              c) Don't know
7. BSE is done during menopause.
  - a) Yes              b) No              c) Don't know
8. How is BSE done?
  - a) One finger palpation
  - b) Palm and three finger palpation
  - c) Don't know



9. Should this be done in a circular motion, covering the whole breast?  
a) Yes            b) No            c) Don't know
10. Does a slippery and wet skin during a bath, facilitate BSE?  
a) Yes            b) No            c) Don't know
11. What are the benefits of BSE? Tick all that apply  
a) To be familiar with breast texture  
b) Early detection of breast cancer  
c) Detection of abnormal changes in the breast  
d) A good breast exercise
2. a. If answer to above question is yes, how often?  
a) Weekly        b) Monthly        c) Occasionally  
d) Rarely        e) Never done
2. b. If answer is no, why not? (can select multiple options)  
a) lack of knowledge  
b) no symptoms/signs  
c) lack of time  
d) fear of finding lumps  
e) embarrassment  
f) others
2. c. If others, pls specify \_\_\_\_\_

#### IV) Attitude

1. I think BSE is very important for early detection of breast cancer.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
2. I think BSE should be done regularly.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
3. We should discuss freely about any discomfort in breast with parents/friends/doctor.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
4. We must immediately go for medical consultation in case there is any discomfort/lump in breast.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
5. BSE is unpleasant and so one can't do it regularly.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
6. BSE should be done only when there is discomfort.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
7. There is no family history of breast cancer so no need to practice BSE.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
8. I think BSE is time consuming.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
9. We should encourage others for performing BSE.  
Strongly agree/Agree/Neutral/Disagree/Strongly disagree
3. Do you practice BSE by looking at the breasts in the mirror with your shoulders straight and your arms on your hips?  
a) Yes            b) No
4. What all do you inspect during BSE? Tick on all that apply  
a) Change in size and shape of breast  
b) Dimpling, puckering, bulging of skin  
c) Redness, soreness, rash, unusual swelling  
d) Change in position/inversion of nipple  
e) Abnormal discharge from nipple (watery, milky, yellow fluid, blood)  
f) Underarm swelling or enlarged lymph nodes  
g) Don't know/No
5. Do you raise your arms and look for the same changes?  
a) Yes            b) No
6. Do you lie down for BSE?  
a) Yes            b) No
7. Do you feel your breasts while standing/sitting?  
a) Yes            b) No
8. Do you feel your breasts by using right hand for left breast and vice versa?  
a) Yes            b) No
9. Do you palpate from your collarbone to the top of your abdomen, and from your armpit to your cleavage?  
a) Yes            b) No

#### V) Practice

1. Do you practice BSE?  
a) Yes            b) No