ORIGINAL ARTICLE

Knowledge, Awareness, and Practices of Breast Cancer in Belagavi

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ABSTRACT

Background and Objectives: Breast cancer is a global health concern. This study was conducted to assess the knowledge, beliefs, and awareness of breast cancer as well as to assess the knowledge on breast self-examination (BSE) and clinical breast examination (CBE) in Belagavi. **Methods:** The questionnaire-based pilot study was conducted among 20–70 years aged females without any history of breast cancer from rural and urban areas of Belagavi. Information about knowledge and beliefs about breast cancer was collected with a pre-tested, semi-structured questionnaire. Findings of BSEs and CBEs were recorded. Sample size for this pilot study was taken as 5% of the total sample size and therefore, 207 female staff from various educational institutions and a teaching hospital was enrolled for the study. Data were analyzed using the Chi-square test. $P < 0.05$ was considered statistically significant. **Results:** Awareness of breast cancer was five-folds higher in urban than in rural areas. The odds of perception about breast cancer was 4.90 (confidence interval [CI] = l 2.2, 10.94) times higher in the urban than in the rural area. Similar results were seen for the BSEs with an odds ratio of 5.03 (CI = 1.18, 21.30). **Conclusion:** Women from urban areas of Belagavi have a fair knowledge and awareness about breast cancer and are also fairly well versed with BSE technique. More awareness about breast cancer, its evaluation and need for early intervention need to be created among the rural population.

KEY WORDS: Breast Cancer Awareness, Self-breast examination, Clinical Breast Examination

Introduction

Breast cancer is the most common type of cancer among Indian women with age adjusted rates as high as 25.8/100,000 women and mortality being 12.7/100,000 women.[1] According to a survey conducted by Indian Council of Medical Research in the metropolitan cities during 1982–2005, the incidence of breast cancer has almost doubled.[2] Studies have reported that in every 4- min one woman is estimated to be diagnosed with breast cancer and in every 8- min one causality due to breast cancer

is observed in India. In 2012, approximately 70,218 fatalities were recorded due to breast cancer in India, which was the highest in the world for that year.[3]

Risk factors for developing breast cancer are age, diet, waist-to-hip ratio, body mass index (BMI), high-density lipoproteins, cholesterol, triglyceride level, more than three pregnancies, years of menstruation, atypical hyperplasia in the previous biopsy, and a history of carcinoma in relatives.[4] Several studies have reported that the early detection of breast cancer by screening is effective in the prevention of disease progression. Clinical breast examinations (CBE) like mammography are not feasible for developing countries due to economic constraints. Hence, advocating breast self-examination (BSE) and promoting awareness are recommended. BSE familiarizes women with both the appearance and the feel of their breasts and helps in detection of any

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abnormal changes in breasts as early as possible and raises the awareness about early detection of breast cancer, particularly among the rural areas.[5]

Around 20–30% of women wait for about 12 weeks or more after self-discovery of a breast symptom to meet a health-care provider for help, and such delays could lead to poor survival. Comprehension of the factors that influence patient delay is quintessential for the development of an effective and targeted health intervention program. These interventions could also plummet the incidence rates.[6]

This study proposed to evaluate the knowledge, attitude, and practices (KAP) of the participants. The knowledge possessed by a community refers to their understanding of any given topic. Attitude refers to their feelings towards this subject, as well as any preconceived ideas that they may have towards it. Practice refers to the ways in which they demonstrate their knowledge and attitude through actions. Understanding the levels of KAP is crucial to create awareness and customize the interventional programs for each community.[7] BSE is a simple, quick, safe, and non-invasive process.[8] CBE contributes to the early detection of breast cancer, identifies previously undetected masses, more so in women below 40 years in whom mammography is not recommended. It not only promotes the practice of BSE but also encourages subjects to evaluate their assessment of BSE.[9]

This pilot study was undertaken to assess knowledge, attitude, and practices of breast cancer among women of Urban and Rural regions of Belagavi.

Methodology
A cross-sectional pilot study was taken up by regional Cell for Women, Belagavi District (Southern India).

Sample size calculation
According to census data 2011, total female population above 7 years was 20,54,090.[10] From Belagavi (rural and urban), 10 towns and 20 villages were randomly selected and from their 4000 samples were randomly selected using probability proportional to size sampling. Sample size for this pilot study was taken as 5% of the total sample size. Hence, 207 female staff from various educational institutions and a teaching hospital was enrolled for the study. The study was conducted from February 2019 to December 2019.

Females in the age group of 20–70 years were included and known cases of breast cancer were excluded from the study. Informed consent was taken in their local language from the subjects. Ethical clearance was obtained from the Institutional Ethical Committee (Ref. MDC/DOME/155 dated 05-11-2019).

A pre-tested, semi-structured questionnaire, and with 40 pertinent questions were structured with four sub-sections (Parts A to D). Part A included the baseline data (age, nativity, religion, diet- vegetarian/non-vegetarian, parity, assessment of risk factors such as history of breast cancer in family, reproductive history, lactation history, history of contraceptive methods used, history of hormonal therapy, age of menarche, age of menopause, and alcohol and tobacco usage) was collected. Height was measured using the commercial Stadiometer to the nearest 0.5 cm. National Council of Health Center/World Health Organization reference data based on height for age was used for the present study to define stunting. Weight was recorded with digital scale with an accuracy of +100 g. BMI was calculated by Quetelet's equation.[11,12] Health status of subjects was assessed taking a detailed history and by performing thorough clinical examination by principal investigator.

Part B scrutinized the knowledge of the participants with 15 relevant questions. Part C was assigned to document the clinical findings and Fine-Needle Aspiration Cytology (FNAC), reports if any. Part D was allotted to record notes and remarks (Annexure 1).

The questionnaire was taken from previous studies and modified as per the requirement and validated by this pilot study. The survey was carried out by a core team comprising two doctors and six nurses from the obstetrics/gynecology department. The questionnaire was duly filled by the core team using the interview method before clinical examination. The CBE was performed by the core team, which was trained and monitored by the subject experts. In the event of a clinical suspicious or ambiguity, the subjects were sent for FNAC investigation to the department of pathology.

Only the subjects who were aware regarding the self-examination were included in this sub-section of the study. In the pro forma section II (Annexure II) question numbers 3, 4, 5, 6, 9, 10, and 11 were

included to calculate the total score. For questions 4 and 5 option 2 were correct and for question 6 option one was correct, while for questions 9, 10, and 11 options 3, 3, and 1 were considered as correct answer, respectively.

Similarly, subjects who were aware about clinical examination were included in this sub-section of the study. In the pro forma's section II (Annexure 1) question numbers 13 to 16 were included to calculate the total score. For question 13 option 2 was correct and for question 14 option 2 or 3 were correct, while for questions 15 and 16 option 1 were considered as the correct answer.

The scoring system implemented was as follows: When the answer was correct it was scored "2." In the case of multiple choice questions, when multiple options were answered along with the correct answer, it was considered as partial knowledge and it was scored as "1." To calculate the total score, the overall percentage was considered. Socio-economic status (SES) was classified based on modified Kuppuswamy socioeconomic scale.[13]

Descriptive analysis of the data was done using SPSS Statistics 23.0 and Excel. Continuous variables were presented in mean ± standard deviation form. Categorical variables were presented as frequency tables. Odds ratio has been used for the assessment of effect size of the test. Categorical variables were calculated using Chi-square test. $P < 0.05$ was considered as significant.

Results

The study included 207 subjects in the age range of 20–70 years. The baseline characteristics of the cohort were documented. Subjects were grouped into four categories from 18 to 45 years based on age. A majority of the subjects ($n = 74$) were in the age of 36–45 years. The mean height was 5.12 ± 0.44 (in ft) and weight was 59.03 ± 10.29 (in kgs). As per the educational profile, 155 (74.88%) of the subjects in the study were well educated whereas 7 (3.38%) were illiterates and 99.03% were working women. As per SES, 16 (47.06%) were from middle class family in rural areas and 70 (40.46%) were from urban areas, followed by 15 (44.12%) from the lower middle class in rural area and 44 (25.43%) from the upper middle class in urban area. Least population was from the upper middle Class 1 (2.94%) from rural area and 28 (16.18%) were from upper class in urban area. A majority of the subjects in the sample

were married, whereas 18.36% were single and the other 5.31% were divorced/widowed.

The risk factors for breast cancer were assessed. Among the total subjects screened, 13 (6.28%) had a family history of breast cancer. History of other cancers was reported in 18 (8.7%) women. History of fibrocystic and endometriosis diseases was reported in 9 (4.35%) and 4 women (1.93%), respectively. Thyroid hormone imbalance was noted in 23 (11.11%). About 3(1.73%) from urban area had previously noticed lumps in their breast while none of the subjects from rural place had noticed lumps in their breast. A majority of the subjects were not on any medication, whereas as 9 (4.35%) and 11 (5.31%) had taken drugs to prevent abortion and for regulating menstrual cycle, respectively.

Using Chi-square test with simulation, health status of subjects was observed to be significantly associated with the geographic area ($P = 0.0345$) (Table 1).

Majority of the subjects in both rural and urban areas had good health. Using Chi-square test, distribution of women having children is approximately equal in rural and urban areas ($P = 0.6332$). In urban places, majority of subjects had their first child in the age group of 20–25 years followed by 26–31 age groups. Only two subjects in the urban area had their first child in the age of above 36 years whereas in rural areas, majority of the subjects had their first child at the age of "<20 years," followed by "20–25" whereas none of the subjects in rural area had their child after 36 years.

Majority of the subjects (72.95%) were still menstruating normally whereas for 31 (14.98%) subject's had attained menopause. For majority of the subjects, age of menarche was "13–14" years, followed by "14-16," "10-12" and 36 (17.39%) of total subjects were not sure about their age of menarche. Majority of the subjects in the sample were not sure about their age of menopause (Table 1).

The participants from the urban area were well aware about self-examination ($P<0.001$) as well as about clinical examination ($P=0.0039$) (Table 1).

Majority of subjects had heard about breast cancer through media. Many subjects considered breast cancer as a serious disease (88.1%) while 64.29%

Table 1: Distribution of subjects based on biological life

Factors	Sub-category	Rural (*n*, [%])	Urban (*n*, [%])	Total (*n*, [%])	*P*-value
Health status	Poor	1 (2.94)	3 (1.73)	4 (1.93)	0.0345cs
	Good	32 (94.12)	133 (76.88)	165 (79.71)	
	Excellent	1 (2.94)	37 (21.39)	38 (18.36)	
Number of Children	None	4 (11.76)	19 (10.98)	23 (11.11)	0.6332c
	One	11 (32.35)	52 (30.06)	63 (30.43)	
	Two	10 (29.41)	63 (36.42)	73 (35.27)	
	3 or more	3 (8.82)	7 (4.05)	10 (4.83)	
	Not applicableᴬ	6 (17.65)	32 (18.5)	38 (18.36)	
Maternal age at first childbirth (years)	<20	12 (35.29)	33 (19.08)	45 (21.74)	0.1314cs
	20–25	9 (26.47)	48 (27.75)	57 (27.54)	
	26–31	2 (5.88)	36 (20.81)	38 (18.36)	
	31–36	1 (2.94)	3 (1.73)	4 (1.93)	
	above 36	0 (0)	2 (1.16)	2 (0.97)	
	Not applicableᴮ	10 (29.41)	51 (29.48)	61 (29.47)	
Breast feeding	Yes	17 (50)	91 (52.6)	108 (52.17)	0.7014c
	No	7 (20.59)	31 (17.92)	38 (18.36)	
	Not applicableᴮ	10 (29.41)	51 (29.48)	61 (29.47)	
Duration of breastfeeding	Never	1 (2.94)	4 (2.31)	5 (2.42)	0.4418c
	<6 months	0 (0)	11 (6.36)	11 (5.31)	
	<1 year	6 (17.65)	35 (20.23)	41 (19.81)	
	>1 year	18 (52.94)	76 (43.93)	94 (45.41)	
	Not applicable	9 (26.47)	47 (27.17)	56 (27.05)	
Menstruation details	Still having menstrual periods	25 (73.53)	126 (72.83)	151 (72.95)	0.3473c
	Not sure, periods are irregular	6 (17.65)	19 (10.98)	25 (12.08)	
	Menstrual periods have stopped permanently	3 (8.82)	28 (16.18)	31 (14.98)	
Age at Menarche (years)	Not sure	6 (17.65)	30 (17.34)	36 (17.39)	0.3683c
	<10	0 (0)	2 (1.16)	2 (0.97)	
	10–12	11 (32.35)	31 (17.92)	42 (20.29)	
	13–14	9 (26.47)	62 (35.84)	71 (34.3)	
	14–16	8 (23.53)	48 (27.75)	56 (27.05)	
Age at Menopause (years)	<44	4 (11.76)	10 (5.78)	14 (6.76)	0.5237cs
	45–50	4 (11.76)	28 (16.18)	32 (15.46)	
	51–55	0 (0)	3 (1.73)	3 (1.45)	
	56–60	0 (0)	1 (0.58)	1 (0.48)	
	Not sure	26 (76.47)	131 (75.72)	157 (75.85)	

c Chi-square test, cs- Chi-square test with simulation, ᴬIndicates the subjects who were single, ᴮIndicates subjects who were single and without having a child

subjects were aware about the risk factors. Around 61.31% population were aware regarding the symptoms of breast cancer. More than half of the population knew that breast cancer would spread to other parts of the body, and about the screening programs for breast cancer.

Using odds ratio, odds of perception about breast cancer was 4.90 [Confidence Interval (CI) 2.2, 10.94] times higher in the urban than in the rural area (Table 2).

Odds of believing "early detection of breast cancer can reduce mortality rate?" was 3.44 (CI: 1.61, 7.35) times higher in women living in the urban areas than rural areas. Using Chi-square test with simulation, the attitude about undergoing breast screening was significantly associated with the place of residence (*P*=0.005) (Table 3).

Among the study subjects, 125 (60.39%) were aware regarding BSE of which 69 (55.2%) had performed BSE at least once in their life. Percentage of subjects who performed BSE was approximately equal in rural and urban places of Belgaum. Among the subjects aware of BSE, 110 (88%) thought that it aided in the early detection of breast cancer. Among the study subjects, 50 (40%) recommended a monthly evaluation of BSE and 40 (32%) believed that self-examination is to be performed whenever one noticed any changes in the breast. Among the subjects who were aware of BSE, 97 (77.6%) were aware of the benefits about the BSE (Early detection of breast cancer). Furthermore, 99 (79%) agreed to consult a doctor if they found any abnormalities during the self-examination. About 80 (64%) among the total subjects, conducted the assessment themselves (Table 4).

Table 2: Knowledge of breast cancer				
Knowledge based questions	**Options**	**Rural (*n*, [%])**	**Urban (*n*, [%])**	**Total (*n*, [%])**
Have you ever heard about breast cancer?	Yes	19 (55.88)	149 (86.13)	168 (81.16)
	No	15 (44.12)	24 (13.87)	39 (18.84)
What is your source (s) of information?*	1	5 (26.32)	32 (21.48)	37 (22.02)
	2	6 (31.58)	38 (25.5)	44 (26.19)
	3	0 (0)	4 (2.68)	4 (2.38)
	4	1 (5.26)	9 (6.04)	10 (5.95)
	5	1 (5.26)	10 (6.71)	11 (6.55)
	6	2 (10.53)	6 (4.03)	8 (4.76)
	Multiple	4 (21.05)	50 (33.56)	54 (32.14)
Is breast cancer a serious disease?*	Yes	16 (84.21)	132 (88.59)	148 (88.1)
	No	3 (15.79)	17 (11.41)	20 (11.9)
Do you know about the risk factors of breast cancer?*	Yes	13 (68.42)	95 (63.76)	108 (64.29)
	No	6 (31.58)	54 (36.24)	60 (35.71)
Do you know about the signs and symptoms of breast cancer?*	Yes	11 (57.89)	92 (61.74)	103 (61.31)
	No	8 (42.11)	57 (38.26)	65 (38.69)
Do you know anything about the pre-diagnostic tests that are available for breast cancer?*	Yes	7 (36.84)	67 (44.97)	74 (44.05)
	No	12 (63.16)	82 (55.03)	94 (55.95)
Can breast cancer be treated?*	Yes	17 (89.47)	139 (93.29)	156 (92.86)
	No	2 (10.53)	10 (6.71)	12 (7.14)
Can breast cancer spread to other parts of the body?*	Yes	11 (57.89)	78 (52.35)	89 (52.98)
	No	8 (42.11)	71 (47.65)	79 (47.02)
Do you think breast cancer is hereditary?*	Yes	10 (52.63)	72 (48.32)	82 (48.81)
	No	9 (47.37)	77 (51.68)	86 (51.19)
Are you aware about any screening programs for breast cancer?*	Yes	6 (31.58)	58 (38.93)	64 (38.1)
	No	13 (68.42)	91 (61.07)	104 (61.9)
Do you think that women who went through menopause after 55 years have a high risk of suffering from breast cancer?*	Yes	7 (36.84)	58 (38.93)	65 (38.69)
	No	12 (63.16)	91 (61.07)	103 (61.31)

*Subjects exclusively aware of breast cancer were included. 1: Books/Newspaper; 2: Media (TV, Radio, or internet); 3: Hospital; 4: Conferences/Seminars/Lecture; 5: Friends; 6: Others

Table 3: Beliefs/Attitude toward breast cancer

Questions based on belief/Attitude	Options	Rural (*n*, [%])	Urban (*n*, [%])	Total (*n*, [%])
Is breast cancer a punishment from God?	Yes	6 (17.65)	12 (6.94)	18 (8.7)
	No	28 (82.35)	161 (93.06)	189 (91.3)
If one of your friends or family has breast cancer, do you think that you will also suffer from the same?	Yes	1 (2.94)	4 (2.31)	5 (2.42)
	No	33 (97.06)	169 (97.69)	202 (97.58)
Do you think giving birth after 30 years increases the risk of breast cancer?	Yes	7 (20.59)	48 (27.75)	55 (26.57)
	No	27 (79.41)	125 (72.25)	152 (73.43)
Do you think smoking and drinking can cause breast cancer?	Yes	16 (47.06)	110 (63.58)	126 (60.87)
	No	18 (52.94)	63 (36.42)	81 (39.13)
Do you feel that early detection of breast cancer can reduce the mortality rate?	Yes	17 (50)	134 (77.46)	151 (72.95)
	No	17 (50)	39 (22.54)	56 (27.05)
Do you think use of brassieres is one of the reasons for breast cancer?	Yes	9 (26.47)	77 (44.51)	86 (41.55)
	No	25 (73.53)	96 (55.49)	121 (58.45)
What do you feel about undergoing breast screening?	It is better to detect early	18 (52.94)	136 (78.61)	154 (74.4)
	It can be done only when the need arises	3 (8.82)	12 (6.94)	15 (7.25)
	I do not feel anything	13 (38.24)	25 (14.45)	38 (18.36)
Breast cancer patients should not be allowed to breast feed. What is your perception?	Yes	15 (44.12)	92 (53.18)	107 (51.69)
	No	19 (55.88)	81 (46.82)	100 (48.31)
Do you have any gender preferences for healthcare practitioners for undergoing breast screening?	Yes	15 (44.12)	84 (48.55)	99 (47.83)
	No	19 (55.88)	89 (51.45)	108 (52.17)
In your point of view, what is the main barrier in undergoing breast screening?	Shyness	12 (35.29)	50 (28.9)	62 (29.95)
	Lack of knowledge	15 (44.12)	67 (38.73)	82 (39.61)
	Fear of diagnosis of cancer	3 (8.82)	21 (12.14)	24 (11.59)
	No facilities	3 (8.82)	9 (5.2)	12 (5.8)
	All the above	1 (2.94)	26 (15.03)	27 (13.04)

Odds of women aware of about self-examination was 6.65 (CI: 2.48, 12.90) times higher in the urban area than in the rural area. Among the subjects who were aware about self-examination, odds of considering that BSE was helpful in the early detection of breast cancer was 7.64 (CI: 1.78, 32.69) times higher in urban area than rural area. Among the subjects aware of self-examination, odds of consulting a doctor in the case of discovering an abnormality during self-examination, was 5.65 (CI: 1.40, 22.87) times higher in urban women when compared to rural women (Table 4).

We observed that among a total of 207 subjects, 110 (53.14%) had heard about CBEs. Out of 34 subjects from the rural area, 11 (32.35%) were aware of CBE, whereas among 173 subjects from the urban area of Belgaum, 99 (57.23%) were aware about CBE. Almost all the subjects who had heard about CBE believed it to be a tool in the early detection of breast cancer. 70 (63%) of the subjects who were aware about CBE considered that a doctor should perform the clinical examination (Table 5).

Using Chi-square test with simulation, self-examination score category was significantly associated with place of residence. Using odds ratio, the odds of having good scores of self-examinations was 5.03 (CI: 1.18, 21.30) times higher in urban area than in rural area. Using Chi-square test with simulation, clinical examination score was independent of place of residence (Table 6).

Table 4: Knowledge and practice about BSE

Questions on BSE	Options	Rural (*n*, [%])	Urban (*n*, [%])	Total (*n*, [%])
Are you aware about BSE?	Yes	9 (26.47)	116 (67.05)	125 (60.39)
	No	25 (73.53)	57 (32.95)	82 (39.61)
Have you ever performed BSE?*	Yes	5 (55.56)	64 (55.17)	69 (55.2)
	No	4 (44.44)	52 (44.83)	56 (44.8)
Do you think that BSE is helpful in the early detection of breast cancer? *	Yes	5 (55.56)	105 (90.52)	110 (88)
	No	4 (44.44)	11 (9.48)	15 (12)
How often should BSE be performed? *	Weekly	0 (0)	17 (14.66)	17 (13.6)
	Monthly	2 (22.22)	48 (41.38)	50 (40)
	If, we notice change in chest	4 (44.44)	36 (31.03)	40 (32)
	Do not know	3 (33.33)	15 (12.93)	18 (14.4)
When is the correct time to perform BSE?*	Before menstruation	1 (11.11)	6 (5.17)	7 (5.6)
	After menstruation	2 (22.22)	50 (43.1)	52 (41.6)
	Any time	2 (22.22)	35 (30.17)	37 (29.6)
	Do not know	4 (44.44)	25 (21.55)	29 (23.2)
What is the best posture for BSE?*	Standing in front of mirror	4 (44.44)	72 (62.07)	76 (60.8)
	Sitting	1 (11.11)	8 (6.9)	9 (7.2)
	Lying	1 (11.11)	14 (12.07)	15 (12)
	No idea	3 (33.33)	22 (18.97)	25 (20)
What is the reason for not practicing BSE?*	Afraid of diagnosed with breast cancer	3 (33.33)	20 (17.24)	23 (18.4)
	Do not know how to do it correctly	2 (22.22)	34 (29.31)	36 (28.8)
	Do not like to touch one's own body	0 (0)	8 (6.9)	8 (6.4)
	Forgot to practice BSE	1 (11.11)	5 (4.31)	6 (4.8)
	Not at risk of getting cancer	0 (0)	6 (5.17)	6 (4.8)
	None of the above	3 (33.33)	41 (35.34)	44 (35.2)
	All the above	0 (0)	2 (1.72)	2 (1.6)
What are the signs of breast cancer? *	Development of lump	3 (33.33)	60 (51.72)	63 (50.4)
	Discharge other than breast milk	1 (11.11)	6 (5.17)	7 (5.6)
	Swelling of breast	0 (0)	7 (6.03)	7 (5.6)
	Skin irritation or dimpling	2 (22.22)	0 (0)	2 (1.6)
	None of the above	1 (11.11)	2 (1.72)	3 (2.4)
	All the Above	2 (22.22)	41 (35.34)	43 (34.4)
Do you know the benefits of BSE?*	Yes	5 (55.56)	92 (79.31)	97 (77.6)
	No	4 (44.44)	24 (20.69)	28 (22.4)
If you discover any abnormality during BSE, will you visit a doctor?*	Yes	4 (44.44)	95 (81.9)	99 (79.2)
	No	5 (55.56)	21 (18.1)	26 (20.8)
BSE is done by*	Yes	6 (66.67)	74 (63.79)	80 (64)
	No	3 (33.33)	42 (36.21)	45 (36)

*Questions posed to only who were aware of BSE. BSE: Breast self-examination

Table 5: Knowledge about CBE

Questions on CBE	Options	Rural (*n*, [%])	Urban (*n*, [%])	Total (*n*, [%])
Have you ever heard about CBE?	Yes	11 (32.35)	99 (57.23)	110 (53.14)
	No	23 (67.65)	74 (42.77)	97 (46.86)
Do you think that CBE is useful in the early detection of Breast cancer? *	Yes	11 (100)	96 (96.97)	107 (97.27)
	No	0 (0)	3 (3.03)	3 (2.73)
Who should perform CBE? *	Individual	2 (18.18)	10 (10.1)	12 (10.91)
	Nurse	3 (27.27)	10 (10.1)	13 (11.82)
	Doctor	4 (36.36)	66 (66.67)	70 (63.64)
	Do not know	2 (18.18)	9 (9.09)	11 (10)
	Anyone	0 (0)	4 (4.04)	4 (3.64)
How often should CBE be done? *	Monthly	2 (18.18)	28 (28.28)	30 (27.27)
	Yearly	6 (54.55)	30 (30.3)	36 (32.73)
	When Abnormality found on BSE	3 (27.27)	21 (21.21)	24 (21.82)
	Do not know	0 (0)	20 (20.2)	20 (18.18)
What is the best tool for the early detection of breast cancer? *	Mammography	4 (36.36)	45 (45.45)	49 (44.55)
	Breast Ultrasound	2 (18.18)	5 (5.05)	7 (6.36)
	Breast Magnetic resonance imaging (MRI) Scan	0 (0)	4 (4.04)	4 (3.64)
	Biopsy	0 (0)	3 (3.03)	3 (2.73)
	No idea	5 (45.45)	42 (42.42)	47 (42.73)

*Only for those who were aware about clinical examination. CBE: Clinical breast examination

Table 6: Comparison of self-examination and clinical-examination scores

Region	Self-examination score		*P*-value	Clinical-examination score		*P*-value
	≥50%	<50%		>74	<75	
Urban	83	33	0.0275*	9	2	0.2174
Rural	3	6		88	11	

*$P<0.05$ is significant

Discussion

Breast cancer is the most common type of cancer in Indian women with a considerable mortality rate. It can be associated with the lack of awareness, knowledge, and practice about breast cancer. This study focused on the screening women from both urban and rural areas to assess the knowledge, awareness, and beliefs regarding breast cancer. Subject's knowledge regarding BSE and CBE was also assessed in the study.

In the current study, 36–45 years were the most common age group whereas in a study conducted by Grunfeld *et al*. (2002), 25–34 years were found to be the most common age group.[6] This may be due to the variations from one region to another.

Most of the subjects from the current study were from the middle class (47.06%), while in a study conducted by Sehrawat *et al*. (2016), more subjects were found to be from the upper middle class (55.3%).[14]

The results of the Birhane *et al*. (2017) showed that knowledge and practices of BSE among female students were 64%, 30.25% had a good knowledge and 28.3% had performed BSE.[15] The varying results between the two studies may be due to the difference in the study population considered for the study. Respondents in some studies[16-18] had a good perception toward breast cancer while in the present study, a moderate knowledge about breast cancer was observed.

A study conducted by Kumarasamy *et al*. (2017), in rural area of India demonstrated that only 26% of the women were aware of BSE, of which 18% had examined their breasts, and 5% practiced it regularly.[19]

In the present study, a total of 53.14% were aware of CBE among which a majority (63.64%) of population believed that it should be performed by doctors. A study by Siddharth *et al*. (2016) found that all study participants are aware of CBE and all of them thought that CBE can be done by doctors only (100%) while none of them were aware of BSE.[20]

In the current study, most of the women from urban area were aware of CBE and had a positive approach toward it, while in a study by Sehrawat *et al*. (2016), in urban and rural areas of district Gurdaspur (Punjab) found that 46%% women were aware about CBE.[14]

The study assessed the basic knowledge of breast cancer among women and the extent of their beliefs regarding breast cancer, along with the knowledge and practice regarding SBE and CBE. It has, thus, served as an educational diagnosis of the community.

The study has its share of limitations. There was unequal distribution of subjects between the groups as more subjects belonged to the urban area. Future studies could recruit an equal number of participants from both urban and rural regions to obtain an accurate estimate.

Breast cancer is the most common cancer affecting women worldwide. There are many risk factors such as age, breast pathology (proliferative breast disease), family history, and genetic predisposition for the development of breast cancer. Mammography is the mainstay for the diagnosis of breast cancer; magnetic resonance imaging and ultrasound have emerged as useful diagnostic tools for breast cancer. Breast cancer can be treated and managed by a prudent multidisciplinary collaboration of surgeons, oncologists, radiation oncologists, nurses, geneticist, reconstructive surgeons, and patients.[21]

Conclusion

This study provides a hereto unexplored insight into the KAP regarding breast cancer among the women of urban and rural areas of a tier II city. It was observed that majority of the women in the urban area had more than a fair idea about breast cancer; its early evaluation methods, namely, BSE and CBE.

The women also demonstrated a positive outlook toward the early detection and amp; treatment of the same. Women in the rural area need to be more aggressively educated about the gravity of breast cancer and its early detection. This study paves the way for more awareness/educational programs which can help improve the chances of survival due to early detection and treatment which, in turn, reduce mortality related to breast cancer.

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Annexure

Annexure I: Pro forma – Breast cancer survey				
Part A				
Name				
Age group (years)	18-25	26-35	36-45	45 and above
Age at Menarche (years)			Age at Menarche	
Age at First Childbirth (years)				
Number of Children				
Breast Feeding	Yes	No		
Profile:	Housewife	Student	Urban	Working Woman
Geographical region	Rural			
Address				
Phone number				
Assessment of risk factors	Family history of breast cancer		Yes	No
	History of any other cancer		Yes	No
	Previously noticed lumps in the breast		Yes	No
	Habit of Chewing Tobacco		Yes	No
	History of Contraception		Yes	No
	Types of Contraception		Oral	
			Implant	
			Injectable	
			IUCD (intrauterine contraceptive device)	
			Others	

Part B Knowledge related to Breast Cancer (Yes/No)

Knowledge 1	Do you know what breast cancer is?
Knowledge 2	Do you feel that early detection can reduce mortality rates?
Knowledge 3	Would you like to go for a screening test?
Knowledge 4	In general, at what age do you think a woman should start routine mammograms?
Knowledge 5	Do you think that age is one of the risk factors of breast cancer?
Knowledge 6	Do you think smoking and drinking can cause breast cancer?
Knowledge 7	Do you think breast cancer is genetic?
Knowledge 8	If one of your friends or relative has breast cancer, do you think that you will also suffer from the same?
Knowledge 9	Do you think giving birth after 30 years, increases the chances of having breast cancer?
Knowledge 10	Do you think that women who went through menopause after 55 years are at a high risk of suffering from breast cancer?
Knowledge 11	Do you know what the pre-diagnostic tests are available for breast cancer?
Knowledge 12	Are you aware about the risk factors for breast cancer?
Knowledge 13	Have you ever undergone any pre-diagnostic tests?
Knowledge 14	Do you know of any government schemes for awareness?
Knowledge 15	Are you aware of breast self-examination?
Part C	
Clinical findings	
Fine-Needle Aspiration Cytology report	
Part D	
Remarks	

Annexure II: Data collection form breast cancer survey	
Part A	
a. Demographic details	
Name	
Address	
Phone Number	
Place of Residence	□Rural □Urban
Ethnicity	
Age Group (yrs.)	□18- 25 □26-35 □36-45 □45 and Above
Education	□None □ Primary school □Secondary school □Higher
Occupation	□Studen □Housewife □Working Women
Socio-economic status (modified Kuppuswamy socio-economic scale)	□Lower middle class (6,431-16,718) □Middle class (16,078-21,437) □Upper middle class (21,438-42,875) □Upper class (≥ 42,876)
Marital status	□Never Married □Married □Divorced/Widowed
Health status	□Poor □Good □Excellent
No. of children	□None □One □Two □3 or More □Not applicable
Age at first child birth (years)	□<20 □20-25 □26-31 □31-36 □above 36 years
Breastfeeding	□Yes □No □Not applicable
Duration of breastfeeding	□Never □< 6 months □< 1 year □> 1 year
Height (cm)	
Weight (kg)	
Menstruation details	□Never menstruated □Still having menstrual periods □Not sure, periods are irregular □Menstrual periods have stopped permanently
Age at Menarche (years)	□ Not sure □<10 □10-12 □13-14 □14-16
Age at Menopause (years)	□<44 □45-50 □51-55 □56-60
b. Risk factor assessment	
Family history of breast cancer	□Yes □No
History of any other cancer	□Yes □No
Relationship with the breast cancer patient	□Mother/Father □Sister/Brother □Daughter/Son □Aunt/uncle/Cousin Others(spec ify)_____
History of fibrocystic disease	□Yes □No
History of Endometriosis	□Yes □No
History of oophorectomy	□Yes □No
Thyroid hormone imbalance	□Yes □No
Radiation exposure to chest	□Yes □No
Previously noticed lumps in the breast	□Yes □No
Habit of chewing tobacco	□Yes □No
Types of contraception	□None □Drugs □IUCD □Others □Not Applicable
History of drug use	□Drugs to prevent abortion □Medication for regulating menstrual cycle □Medication for the treatment of infertility, □Menopause replacement therapy etc.,
BMI	□Normal body weight (BMI <25), □ Overweight (BMI 25-30) □Obese (BMI ≥30)
Physical activity	□Low □Moderate □High
Use of hair dyes	□Yes □No
History of usage of creams to augment breast size	□Yes □No
History of any surgery to augment breast size	□Yes □No
Food habits	□Vegetarian □Non-Vegetarian
Diet pattern	□Low fat diet along with high intake of fruits, vegetables, and whole grains □Low fat diet along with high intake of fruits, vegetables, and whole grains, meat and poultry □Low fat diet with medium intake of fruits, vegetables, and grains □Low fat diet with medium intake of fruits, vegetables, grains meat, and poultry □High fat diet with minimal intake of fruits, vegetables, and grains □High fat diet with minimal intake of fruits, vegetables, grains, meat, and poultry

Part B: Knowledge AND belief toward breast cancer	
Knowledge/perception toward breast cancer	
1	Have you ever heard about breast cancer?	□Yes □No
2	What is your source (s) of information?	□Books/Newspapers □Media (TV, Radio or Internet) □Hospital □Conferences/ seminars/ Lecture □Friends □Others (pls. specify) _____
3	Is breast cancer a serious disease?	□Yes □No
4	Do you know about the risk factors of breast cancer?	□Yes □No
5	Do you know about the signs and symptoms of breast cancer?	□Yes □No
6	Do you know anything about the pre-diagnostic tests that are available for breast cancer?	□Yes □No
7	Can breast cancer be treated?	□Yes □No
8	Can breast cancer spread to other parts of the body?	□Yes □No
9	Do you think breast cancer is hereditary?	□Yes □No
10	Do you know about any screening program for breast cancer?	□Yes □No
11	Do you think that women who went through menopause after the age of 55 have high risk of suffering from breast cancer?	□Yes □No
1. Belief /attitude towards breast cancer	
12	Is breast cancer punishment from god?	□Yes □No
13	If one of your friends or relative has breast cancer, do you think that you will also suffer from the same?	□Yes □No
14	Do you think giving birth after age of 30 increase breast cancer?	□Yes □No
15	Do you think smoking and drinking can cause breast cancer?	□Yes □No
16	Do you feel that early detection of breast cancer can reduce mortality rate?	□Yes □No
17	Do you think use of brassieres is one of the reasons for breast cancer?	□Yes □No
18	What do you feel about undergoing breast screening?	□It is better to detect early □It can be done only when need arise □ I don't feel anything
19	Breast cancer patients should not be allowed to breast feed	□Yes □No
20	Do you have any gender preference for healthcare practitioner for undergoing breast screening?	□Yes □No
21	In your point of view, what is the main barrier in undergoing breast screening?	□Shyness □Lack of knowledge □Fear of diagnosis of cancer □No facilities
2. Practice	
22	Are you afraid to think about Breast cancer	□Yes □No
23	If you notice any abnormality in your chest, with whom you will discuss?	□Family members □Friends □Doctor □None
24	If you ever undergo breast screening what would you feel?	□Fear of the disease □Ruling out the possibility of having breast cancer □Confirming a diagnosis
Knowledge and practice of breast self-examination and clinical breast examination	
25	Have you heard about breast self-examination?	□Yes □No
26	Did you ever perform breast self-examination?	□Yes □No
27	Do you think that BSE is helpful in early detection of breast cancer	□Yes □No

(Contd...)

Part B: *(Continued)*

28	How often should BSE be performed	□Weekly □Monthly □If, we notice any change in the chest □Don't' know
29	When is the correct time to perform breast self-examination	□Before menstruation □After menstruation □Any time □Don't know
30	What is the best Posture for breast self-examination	□Standing In front of the mirror □Sitting □Lying □ No idea
31	What is the reason for not practicing breast self-examination?	□I am afraid of being diagnosed of Breast Cancer □I do not know how it is done correctly □I do not like touching my body □I forget to practice BSE □I'm not at risk of getting breast cancer □None of the above
32	What are the signs of breast cancer?	□Development of a lump □A discharge other than breast milk □Swelling of the breast □Skin irritation or dimpling □Nipple abnormalities □None of the above □ No idea
33	Do you know the benefits of breast self-examination?	□To be familiar with the breast texture □Early detection of breast cancer □ Detection of any abnormal changes in the breast □A good breast exercise
34	If you discover any abnormality during breast self-examination, what will you do?	□Pray to God □Do some lab. tests □ Visit a doctor □Do nothing
35	BSE is done by	□Individual □Nurse □Doctor □Don't know □Any one
36	Did you ever hear about CBE?	□Yes □No
37	Do you think that CBE is useful in early detection of Breast cancer	□Yes □No
38	Who should perform CBE?	□Individual □Nurse □Doctor □Don't know □Any one
39	How often should CBE be done?	□Monthly □Yearly □When abnormality is found on BSE ¨ ¡ Don't know
40	What is the best tool for the early detection of breast cancer?	□Mammography □Breast Ultrasound □Breast MRI scan □ Biopsy □ No idea