Original Article

Breast self-examination practices among young rural women and its associated knowledge and attitudes in Tirunelveli District, Tamil Nadu

ABSTRACT

Context: Breast self-examination (BSE) is a simple and cost-effective screening procedure in downstaging breast tumors.

Aim: To assess the BSE practices and its associated knowledge and attitudes of rural women from Tirunelveli District, Tamil Nadu during the COVID-19 pandemic.

Settings and Design: A descriptive cross-sectional survey design was employed, and snowball sampling was used to recruit the sample of rural women from Tirunelveli.

Materials and Methods: Women ages 18–60 willing to take part were included. Data were collected online through a self-developed questionnaire.

Statistical Analysis: Responses were analyzed using SPSS Version 20. Descriptive statistical analysis was used to present the general details and responses of the rural women through percentages. Using the appropriate tests, the mean differences of the BSE attitudes based on the personal variables were computed using one-way ANOVA.

Results: A total of 433 rural women (Mean age: 29.20 ± 9.35 years) from Tirunelveli responded to the online Knowledge, Attitude and Practice (KAP) questionnaire. Regular health checkups were undergone by 27.48% of women and 9.24% underwent breast cancer (BC) screening in the past. While 68.36% had heard of BC, 61% knew it could be detected in the early stages. Insufficient knowledge regarding BSE techniques was evident among the women. Knowledge about BC was highest among those earning more than 20,001 INR, women aged 36–45, widowed/separated/divorced women, and diploma graduates. Overall, BSE and BC knowledge score was low, with correspondingly low attitudes and practices.

Conclusion: Findings showed the KAP among rural Tirunelveli women to be low.

KEY WORDS: Breast cancer screening, breast self-exam, COVID-19 pandemic, early detection, rural women

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INTRODUCTION

In India, presently breast cancer (BC) accounts for 13.5% (178,361) of all cancer cases and 10.6% (90408) of all deaths in India with a cumulative risk of 2.81.[1] India has observed a significant rise in young age BC incidence, with BC diagnosis exceeding that of cervical cancer to become the most prevalent cancer among women in the country.[2] Research has shown BC survival rates to reduce with each progressive stage (stage I: 83.5%, stage II: 80.6%, stage III: 66.0%, and stage IV: 37.1%).[3] Early detection through regular screening reduces BC mortality,[4] and is fundamental in the prognosis, treatment, and outcomes of BC diagnosis.[5] Common BC screening modalities suggested to decrease morbidity and mortality include mammography, clinical-breast examinations (CBE), and breast self-examinations (BSE).[6]

Most breast tumors diagnosed in the initial stages are self-discovered.[7] The BSE is a simple way to monitor breast health when conventional screening

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tests may be difficult to access, such as during the COVID-19 pandemic. Unlike for CBE and mammography, women are not required to visit a health care professional for the BSE, because of which it is a private, convenient, and cost-effective method for women to perform themselves to look for abnormalities that may need further medical attention.[8,9] The BSE reduces feelings of shame, embarrassment, and fear of stigma that may hinder them from taking preventive measures[10] and allows women to develop breast awareness, and become familiar with the appearance of their breasts to identify abnormalities early on.[11]

Regardless of its simplicity, BSE practices in India range from 0 to 52%.[12,13] There is poor awareness, knowledge, and attitudes towards BSE, asserting the need for interventions to improve understanding.[14] Therefore, the present study was conducted to assess the BSE practices and its associated knowledge and attitudes of young rural women from Tirunelveli District, Tamil Nadu during the COVID-19 pandemic.

SUBJECTS AND METHODS

Research design

A descriptive cross-sectional survey design was employed. Data were collected online through the Google Forms platform during the COVID-19 pandemic between January and March 2021.

Sample design

Snowball sampling was used to recruit the women from rural Tirunelveli. It is interesting to note that 85% of the rural women use mobile phone and internet, therefore, used Google Form to collect the data for the present study.[15] The Google Forms link was sent to some rural women and they were asked to further send the link to other women in the area.

The sample size estimate for the sample from general population was produced by running statistical power calculations for proportions to produce a precise estimate with a margin of error ≤ 0.05. It was assumed that a statistical power of 0.80 was required, while the Type 1 error rate is controlled at $\alpha = 0.05$, as is standard. Power calculations were generated based on prevalence rates of general knowledge on BC. Data from Bakthavatchalam, Govindarajan and Felix[16] revealed that on average, 27.4% had moderate knowledge on BC. Based on this, the sample was calculated to be 378.62. The sample size was adjusted to account for deviations from simple random sampling using the design effect of 10%. Adding the design effect of 10% (378.62+37.9), the target sample to be chosen from the general adult women population is 416.52, rounding off to 420.

Tools used in the study

The BSE KAP questionnaire developed by the researcher in the vernacular language consisted of seven items assessing BC knowledge, nine regarding BSE knowledge, six regarding BSE attitudes, and six regarding BSE practices. It was validated using the Delphi Technique. The KAP BSE questionnaire was circulated among a panel of experts in the field of psychology and oncology, during which they provided their opinions, and appropriate modifications were made till consensus was reached.[17] After validation, the BSE KAP questionnaire was pilot tested and the final version was virtually sent to the women. Their socio-demographic (age, educational status, occupational status, marital status, and family income) and health (co-morbidities, regular health checkup, age at menarche, number of pregnancies, age at first pregnancy, use of birth control, family history of cancer, past BC screening tests, and whether or not they are physically active and eat a healthy diet) details were also collected.

Correct knowledge responses were given 1 point and added together, following which percentage was calculated. Knowledge scores were then categorized as "excellent" (>90%), "very good" (80–89%), "good" (70–79%), "satisfactory/moderate" (60–69%), "average" (50–59%), "poor" (40–49%), and "very poor" (<40%). For attitudes, negative scoring involved responses on a scale of 0–4, with 0 being "*strongly agree*" and 4 "*strongly disagree*." Positive scoring involved responses on a scale of 4–0, with 4 being "*strongly agree*" and 0 being "*strongly disagree*."

Procedure

The online questionnaire was sent to some women in rural Tirunelveli. These women forwarded the link to others. Phone numbers of the interested women were collected, and the researcher contacted them separately to confirm their willingness to take part. Among those identified as illiterate, the researcher surveyed them over the phone. For the literate, data collection was completed online. Deidentification was done by setting the Google Forms to maintain anonymity of participant responses. The online questionnaire had instructions for the women to respond to the items. After completion of the questionnaire, women submitted the Google Forms and their responses were analyzed with necessary statistical tests using SPSS (Statistical Package for the Social Sciences) Version 20 software.

Statistical analyses

SPSS Version 20 was used to process the collected data. Descriptive (mean, standard deviation, frequency, and percentage) and inferential statistics (one-way analysis of variance) were used. Microsoft Excel was used for development of graphs.

Ethical guidelines

The study was approved by the Doctoral Committee of Rajiv Gandhi National Institute of Youth Development. The researcher ensured that the Google Forms were briefed to them about the study and instructed them to proceed only if they were willing. For deidentification, the researcher modified Google Forms settings to ensure anonymity of participant

responses, and those surveyed on the phone were not asked for their names. Data were maintained with utmost confidentiality and only used for the purpose of this study.

RESULTS

Out of 450 women from Tirunelveli who were approached, 433 women responded to the Google Form between January and March, 2021. The mean age of the women was 29.20 ± 9.354 years. According to Table 1, 260 (60.05%) were married, 159 (36.72%) were unmarried, and 14 (3.23%) did not have a spouse because of the reasons such as divorce, death, or separation. In terms of education, 186 (42.95%) had completed either under- or post-graduation, whereas 27 (6.24%) were illiterate. In this sample of women, 151 (34.87%) were homemakers.

Out of the 274 married, divorced, separated, or widowed women, 242 (88.32%) had children and 20 (7.30%) used or still use birth control. Among those with children, 126 (52.07%) had two to three children, 97 (40.08%) had one child, and 19 (7.85%) had more than four children. During their first pregnancy, 174 (71.90%) were between 19 and 25 years. About 1/5 and 3/10 had cancer in the family and co-morbidities, respectively. Regular health checkups were undergone by 119 (27.48%) and 40 (9.24%) had undergone BC screening tests previously. A healthy diet was eaten by 284 (65.59%) and 177 (40.88%) reported never being physically active [Table 1].

BC was previously heard of by 296 (68.36%) and 264 (60.97%) knew that it could be detected in the early stages. Half the sample knew that all women were at risk of developing BC 214 (49.42%), whereas 18 (4.16%) knew it could be asymptomatic. Although the CBE 121 (27.94%) and BSE 84 (19.40%) were often heard, 203 (46.88%) had never heard of any of the BC screening modalities. Friends, family members, and neighbors 167 (38.57%) were common sources of BC information. BC screening recommendations were thought to be the same for all by 183 (42.26%), and 151 (34.87%) stated that all women should be aware of the BSE regardless of age. Although approximately half the sample had heard of BSE 209 (48.27%), the other half had not 224 (51.73%). Similarly, 195 (45.03%) of the women were aware that BSE could be performed at home. A quarter knew that the BSE requires a mirror 111 (25.64%). While performing the BSE, dimpling, puckering, or bulging skin 249 (57.51%), and changes in breast shape, size, or texture 202 (46.65%) were reported to be looked out for. With respect to timing of performing BSE, 126 (29.10%) knew that it has to be performed at the same time each month, a few days after menstruation. Half the women know BSE has to be performed while standing 215 (49.65%), and 144 (33.26%) knew it has to be performed while lying down 144 (33.26%). Proper BSE technique was not known among 256 (59.12%) [Tables 2 and 3].

One-way ANOVA demonstrated a significant difference in BC and BSE knowledge based on education and occupational

Table 1: Socio-demographic and health details of the rural women

Socio-Demographic/ Health Details	Categories	*n*	(%)
Age (years)	18-25	97	(22.40)
	26-35	138	(31.87)
	36-45	126	(29.10)
	More than 46	72	(16.63)
Marital status	Married	260	(60.05)
	Single	159	(36.72)
	Widow	10	(2.31)
	Separated	3	(0.69)
	Divorced	1	(0.23)
Educational status	Illiterate	27	(6.24)
	Primary School	67	(15.47)
	Secondary school	65	(15.01)
	High school	65	(15.01)
	Diploma	23	(5.31)
	Under-graduation	140	(32.33)
	Post-graduation	46	(10.62)
Occupational status	Student	56	(12.93)
	Teacher	9	(2.08)
	Homemaker	151	(34.87)
	Unemployed	66	(15.24)
	Others	76	(17.55)
	Nurse	2	(0.46)
	Daily labour	66	(15.24)
	Agriculture	7	(1.62)
Family Income (INR)	Less than 1,000	39	(9.01)
	1,001-5,000	139	(32.10)
	5,001-10,000	142	(32.79)
	10,001-15,000	77	(17.78)
	15,001-20,000	22	(5.08)
	20,001	14	(3.23)
Age at menarche	Mean: 14.43, SD: 2.75		
Children (*n*=274)	Yes	242	(88.32)
	No	32	(11.68)
Age during first pregnancy (*n*=242)	<18	29	(11.98)
	19-25	174	(71.90)
	26-31	35	(14.46)
	>32	4	(1.65)
Number of children (*n*=242)	1	97	(40.08)
	2-3	126	(52.07)
	>4	19	(7.85)
Duration of breastfeeding children (months) (*n*=242)	1-6	63	(26.03)
	7-12	47	(19.42)
	13-18	32	(13.22)
	19-24	16	(6.61)
	25-30	11	(4.55)
	31-36	3	(1.24)
	Currently Breastfeeding	1	(0.41)
	No breastfeeding	69	(28.51)
Birth control use history (*n*=274)	Yes	20	(7.30)
	No	254	(92.70)
Family members or close relatives affected by cancer	Yes	40	(9.24)
	No	351	(81.06)
	Do not know	42	(9.70)
Comorbidities	Hypertension	14	(3.23)
	Diabetes	8	(1.85)
	Cardiovascular	4	(0.92)
	Mental health problems	2	(0.46)
	None	313	(72.29)
	Do not know	92	(21.25)
Regular health Checkup	Yes	119	(27.48)
	No	314	(72.52)
Underwent breast cancer screening previously	Yes	40	(9.24)
	No	393	(90.76)

Contd...

Table 1: Contd...

Socio-Demographic/ Health Details	Categories	*n*	(%)
Physically active	Never	177	(40.88)
	Sometimes	166	(38.34)
	Everyday	70	(16.17)
	Weekly 2/3 Times	20	(4.62)
Healthy diet	Yes	284	(65.59)
	No	149	(34.41)

status. There was a significant difference in BSE knowledge based on age and marital status as well as a significant difference in BC knowledge based on family income.

Women from a diploma background had more knowledge, followed by those with post-graduation and high school education. Illiterate women had the least in terms of both BC and BSE. Increasing levels of knowledge were evident from illiterate to high school, following which no pattern was observed.

Similarly, nurses had more knowledge about BC and BSE, and unemployed had the least. Knowledge about BC was highest among those earning more than 20,001 INR, and lowest among those earning 1,001–5,000 INR. Women aged 36–45 and those who were widowed/separated/divorced had more knowledge than others [Table 4].

Figure 1 demonstrates the percentage of women falling into each knowledge score category. For BSE and BC knowledge, 257 (59.35%) and 280 (64.67%) of the women, respectively, had very poor knowledge score.

The BSE was perceived a waste of time by 249 (57.51%), and 216 (49.89%) felt shy or awkward when performing it. Although 72.52% believed that women should be educated and empowered about the BSE, 45.73% ($n = 198$) were afraid and anxious of finding an abnormality. Women claimed to have insufficient information about performing the BSE properly ($n = 294$; 67.90%), and also questioned their own ability to identify abnormalities, as they believed only doctors could do so efficiently ($n = 279$; 64.44%) [Table 5].

Although 80.73% had not performed BSE, 85 (19.63%) had previously performed it. Out of the women who had done it before, 83 (97.65%) of them did it both while standing and lying down, and 72 (84.71%) underwent clinical screening tests along with the BSE. Additionally, 21 (24.71%) performed it once a month, whereas six (7.06%) of them did it once a week. Furthermore, 56 (12.93%) of the women advised and educated their friends regarding the importance of BSE. A commonly cited reason for not doing the BSE is having no symptoms (49.19%). However, in the case that any of them detect an abnormality when or if they perform the BSE, 279 (64.43%) reported that they would contact a medical professional [Tables 6 and 7].

DISCUSSION

The present study was conducted to assess the BSE practices and its associated knowledge and attitudes of young rural women from Tirunelveli District, Tamil Nadu during the COVID-19 pandemic. The study included 433 women (mean age: 29.20 ± 9.354 years) from rural Tirunelveli who were willing to take part in the study. It is the first of its kind to understand BSE practices and associated knowledge and attitudes of rural Tirunelveli women during the pandemic.

In the present study, 296 (68.36%) women had heard of BC, but only 45.73% had heard of the BSE. This is in line with a study by Kumarasamy, Veerakumar, Subhathra, Suga, and Murugaraj[18] who also showed that even among educated working women, most women were aware of BC but less women were aware of the BSE.[16] Additionally, most women knew that early detection improves survival, but only 5.7% women knew about early detection.[19] Lump in the breast/armpit, changes in breast shape/size/texture, and swelling/redness/bulging breasts were most known symptoms among the women. Existing literature also states that a lump/mass in the breast to be the primary risk factor or sign of BC among women.[20] Less than 1/10 women were aware that a lump in the breast could indicate BC, with the majority not being able to cite a single sign/risk factor.[21]

Dahiya *et al.*[22] showed 49% of women to be aware of mammography having a role in early detection, but in the present study, clinical and BSE were more often heard. The most common source of BC information was through friends, family members, and neighbors, which contradicts a study showing the primary source of information among women in Karnataka to be medical personnel.[23] As this study was conducted in the rural areas, it may be possible that they had limited interactions with medical personnel.

Furthermore, less 1/3 of rural women knew that BSE is to be performed at the same time a few days after menstruation each month. Knowledge regarding the same was higher among a sample of female undergraduate students, as half knew the proper frequency and timing to perform BSE. This could be because of higher literacy levels. The same study reported that 44% and 36% of the women did not know that the BSE should be carried out while standing and lying down, with a poor understanding of proper technique.[20] This confirms findings of the present study also showing a poor understanding and practice of proper BSE technique and positions.

Studies have shown an increase in knowledge regarding BC signs, BSE practices, risk factors, and symptoms following health intervention programs focused on subpopulations. This marks the need for conducting health interventions and primary health care providers to be trained regarding the same.[24]

Table 2: Knowledge of the rural women regarding Breast Cancer

Items	Responses	*n*	(%)
Have you heard of BC?	Yes	296	(68.36)
	No	137	(31.64)
Early detection of BC improves recovery and survival rate.	Yes	264	(60.97)
	No	31	(7.16)
	Do not know	138	(31.87)
All women regardless of age are at risk of developing BC	Yes	214	(49.42)
	No	56	(12.93)
	Do not know	163	(37.64)
Symptoms of BC include	Lump in breast/armpit	191	(44.11)
	Dimpling/puckering of breast skin	34	(7.85)
	Inversion of nipple	35	(8.08)
	Fever	6	(1.39)
	Cough and cold	3	(0.69)
	Discharge from nipple	42	(9.70)
	Swelling/redness/bulging breasts	49	(11.32)
	Shape/size/texture changes	68	(15.70)
	BC can be asymptomatic	18	(4.16)
Have you heard of the following BC screening modalities:	MRI	20	(4.62)
	Breast biopsy	10	(2.31)
	Mammography	27	(6.24)
	CBE	121	(27.94)
	BSE	84	(19.40)
	Thermography	6	(1.39)
	I have never heard of these	203	(46.88)
Source of BC/heard of BC through:	Television	83	(19.17)
	Social media sites	61	(14.09)
	Friends/neighbors/family members	167	(38.57)
	Medical professional	78	(18.01)
	Advertisements	49	(11.32)
In terms of screening with respect to age	Women ages 40-44 should be able to decide to start BC screening with a mammogram yearly.	47	(10.85)
	Women ages 45-54 should get mammogram done every year	11	(2.54)
	Women >55 should get a mammogram done every 1 or 2 years	2	(0.46)
	All women should be aware of their breasts and how to perform BSE.	151	(34.87)
	Women <20 years do not need screening.	20	(4.62)
	Same for all	183	(42.26)
	Do not know	19	(4.39)

BSE=breast self-examination, BC=breast cancer, CBE=clinical-breast examinations

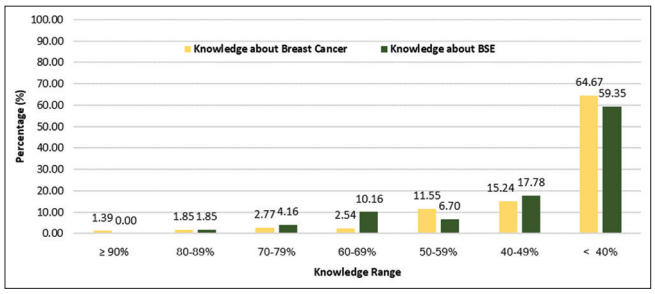

Figure 1: The percentage distribution of knowledge on breast cancer and breast self-examination ranging from less than 40% to more than 90%

Diploma graduates had more knowledge and illiterate women had the least. This is supported by Gangane, Ng, and Sebastián[25] who illustrated women of higher education levels and older age to have more knowledge regarding BC. Nurses had more knowledge about BC, and the unemployed had the least knowledge. This is possibly because of the nurses having more exposure in the medical field, and observing other medical professionals around them assert the importance of BC, and associated screening. As individuals in other professions are not exposed to this information, they may have lower levels of BC and screening knowledge.

Knowledge was highest among those earning more than 20,001 INR and lowest among those earning 1,001–5,000 INR, which is in line with a study among a sample of college girls in India that found family income to be related with BC and BSE knowledge.[26] Kumarasamy, Veerakumar, Subhathra, Suga, and Murugaraj[18] demonstrated age and educational qualifications to be significantly related to BSE knowledge and awareness, which is consistent with the present study also showing that women had increasing knowledge from 18 to 45 years. However, those aged more than 46 years had the least. Similarly, illiterates had the least knowledge. Regardless of low cancer literacy among Indian women, nurses are reported to have higher awareness regarding family history, obesity, and reproductive history in terms of BC risk factors.[27]

Ishaaque and Gopalamenon[28] conducted a study in rural Kerala and found that regardless of 80.5% of the women

Table 3: Knowledge of the rural women regarding Breast Self Examination

Items	Response	*n*	(%)
Have you heard of BSE?	Yes	209	(48.27)
	No	224	(51.73)
The BSE can be done at home on your own to detect abnormalities that may be cancerous in your breasts	Yes	195	(45.03)
	No	238	(54.97)
BSE can help diagnose abnormal tumors in breasts (including cancerous growths).	Yes	198	(45.73)
	No	235	(54.27)
BSE requires a mirror	Yes	111	(25.64)
	No	157	(36.26)
	Do not know	165	(38.11)
During BSE, the following are to be observed for	Changes in size/shape/texture	202	(46.65)
	Inverted nipples	26	(6.00)
	Nipple discharge	97	(22.40)
	Lumps	81	(18.71)
	Redness/soreness/swelling	89	(20.55)
	Unevenly shaped breasts	69	(15.94)
	Dimpling/puckering/skin bulging	249	(57.51)
The BSE is to be performed…	On the first day of each month	19	(4.39)
	At same time each month, 3-5 days after menstruation	126	(29.10)
	At same time each month, before menstruation	30	(6.93)
	Do not know	258	(59.58)
The BSE is performed while…	Sitting	26	(6.00)
	Walking	4	(0.92)
	Standing	215	(49.65)
	Lying down	144	(33.26)
	Do not know	44	(10.16)
The BSE is performed	With pads of two middle fingers, in small circular motion	21	(4.85)
	With palm	82	(18.94)
	With pads of one middle finger, in small circular motion	9	(2.08)
	With pads of three middle fingers, in small circular motion	65	(15.01)
	Do not know	256	(59.12)

BSE=breast self-examination

Table 4: Relationship of socio-demographic variables on the knowledge of Breast Cancer and Breast Self Examination among rural women

Socio-Demographic Details	Categories	*n*	(%)	Knowledge about BC				Knowledge about BSE			
				Mean	SD	*F*	*p*	Mean	SD	*F*	*p*
Age (years)	18-25	97	(22.40)	34.08	19.40	0.233	0.873^{NS}	28.25	21.46	9.215	0.000**
	26-35	138	(31.87)	34.14	16.74			32.70	20.84		
	36-45	126	(29.10)	35.64	19.23			41.51	21.22		
	More than 46	72	(16.63)	36.26	20.89			26.41	18.81		
Marital status	Married	260	(60.05)	35.49	17.44	1.147	0.318^{NS}	35.88	21.36	12.780	0.000**
	Single	159	(36.72)	32.81	19.71			25.25	20.22		
	Widow/Separated/Divorced	14	(3.23)	37.24	31.09			36.19	27.26		
Education	Illiterate	27	(6.24)	19.05	13.24	5.858	0.000**	16.83	15.00	4.937	0.000**
	Primary School	67	(15.47)	32.94	14.76			36.52	20.87		
	Secondary school	65	(15.01)	33.74	14.70			30.36	20.55		
	High school	65	(15.01)	35.05	9.79			38.36	23.09		
	Diploma	23	(5.31)	45.03	17.55			39.71	18.37		
	Under-graduation	140	(32.33)	33.88	19.34			27.62	20.74		
	Post-graduation	46	(10.62)	43.63	22.85			34.49	24.76		
Occupational status	Student	56	(12.93)	33.04	19.81	4.927	0.000**	26.67	21.39	5.263	0.000**
	Teacher	9	(2.08)	47.62	18.90			43.70	22.39		
	Homemaker	151	(34.87)	35.33	15.84			32.52	20.88		
	Unemployed	66	(15.24)	28.91	19.13			22.01	16.79		
	Nurse	2	(0.46)	64.29	30.30			60.00	18.86		
	Daily labour	66	(15.24)	30.30	15.75			38.79	23.21		
	Agriculture	7	(1.62)	52.04	21.71			50.48	16.71		
	Others	76	(17.55)	40.41	21.56			33.51	22.47		
Family income (INR)	<1,000	39	(9.01)	38.03	18.83	4.883	0.000**	36.86	19.78	1.357	0.239^{NS}
	1,001-5,000	139	(32.10)	31.55	18.80			33.62	22.30		
	5,001-10,000	142	(32.79)	32.31	17.28			29.39	20.56		
	10,001-15,000	77	(17.78)	39.98	18.15			28.92	21.24		
	15,001-20,000	22	(5.08)	43.51	21.47			35.15	24.87		
	>20,001	14	(3.23)	46.43	19.56			35.24	23.16		

BSE=breast self-examination, BC=breast cancer

Table 5: Attitudes of the rural women regarding Breast Self Examination

	Strongly agree		Agree		Neutral		Disagree		Strongly Disagree	
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)
BSE is waste of time and has no purpose	136	(31.41)	113	(26.10)	71	(16.40)	64	(14.78)	49	(11.32)
I will go to a screening centre instead of performing the BSE.	59	(13.63)	84	(19.40)	125	(28.87)	105	(24.25)	60	(13.86)
I feel shy/awkward performing a BSE.	111	(25.64)	105	(24.25)	97	(22.40)	76	(17.55)	44	(10.16)
I am afraid and anxious that I may detect an abnormality when performing the BSE.	102	(23.56)	96	(22.17)	156	(36.03)	52	(12.01)	27	(6.24)
I think all women should be empowered and educated about BSE.	170	(39.26)	144	(33.26)	94	(21.71)	18	(4.16)	7	(1.62)
I do not have enough information about BC and BSE to perform it properly.	111	(25.64)	183	(42.26)	87	(20.09)	37	(8.55)	15	(3.46)
I cannot correctly identify abnormalities with the BSE. Only doctors can identify it.	187	(43.19)	92	(21.25)	88	(20.32)	50	(11.55)	16	(3.70)
I do not think all the women should do BSE. You should do it only if you have symptoms.	85	(19.63)	96	(22.17)	110	(25.40)	58	(13.39)	84	(19.40)

BSE=breast self-examination

Table 6: Relationship between socio-demographic variables and attitude towards Breast Self Examination among the rural women

Socio-Demographic Details	Categories	*n*	(%)	Mean	SD	*F*	*p*
Age (years)	18-25	97	(22.40)	15.16	4.42	1.869	0.134^{NS}
	26-35	138	(31.87)	14.61	3.73		
	36-45	126	(29.10)	15.90	4.81		
	More than 46	72	(16.63)	14.08	5.44		
Marital status	Married	260	(60.05)	15.31	4.46	0.820	0.441^{NS}
	Single	159	(36.72)	14.94	4.56		
	Widow/Separated/Divorced	14	(3.23)	14.00	2.25		
Education	Illiterate	27	(6.24)	12.76	4.57	4.377	0.000**
	Primary school	67	(15.47)	14.99	4.30		
	Secondary school	65	(15.01)	14.71	4.74		
	High school	65	(15.01)	14.51	3.91		
	Diploma	23	(5.31)	16.87	5.34		
	Under-graduation	140	(32.33)	14.91	4.35		
	Post-graduation	46	(10.62)	17.54	3.91		
Occupational status	Student	56	(12.93)	14.96	4.15	3.485	0.001**
	Teacher	9	(2.08)	17.33	4.09		
	Homemaker	151	(34.87)	15.27	4.82		
	Unemployed	66	(15.24)	14.02	4.56		
	Others	76	(17.55)	16.11	3.69		
	Nurse	2	(0.46)	25.50	7.78		
	Daily labour	66	(15.24)	14.27	3.92		
	Agriculture	7	(1.62)	14.14	5.70		
Family income (INR)	<1,000	39	(9.01)	14.65	3.84	1.224	0.297^{NS}
	1,001-5,000	139	(32.10)	14.78	3.93		
	5,001-10,000	142	(32.79)	14.83	5.34		
	10,001-15,000	77	(17.78)	15.81	4.16		
	15,001-20,000	22	(5.08)	15.86	3.85		
	>20,001	14	(3.23)	16.79	4.49		

BSE=Breast self-examination, SD=Standard deviation. *Significant at *P*<0.05, **Significant at *P*<0.01

having a positive attitude, a mere 36% of the women actually performed the exam. This is consistent with the present study where more women believed that women should be educated and empowered about the BSE, many were afraid and anxious about finding an abnormality themselves. Thus, demonstrating their positive attitudes but barrier to practice the same. Many women even considered the BSE a waste of time, and even questioned their ability to find abnormalities. Furthermore, women stated that they did not have enough information to properly conduct the BSE. This highlights the need for interventions, camps, and medical professionals to educate the rural population regarding the BSE, as this may improve their attitudes and knowledge.

Educated individuals may have received information about BSE and early detection, because of which they have a positive attitude compared to the illiterate who may be dominated by misconceptions, shame, and social stigma regarding the condition and its screening. The positive attitude of the nurses could be attributed to their medically rich work environment that improves their perception of BSE and BC detection. It is possible that women in the present study did not think a self-exam could detect tumors because of the lack of medical

Table 7: Breast Self Examination practices of the rural women

Items	Response	*n*	(%)
Have you ever performed a BSE?	Yes	85	(19.63)
	No	348	(80.37)
I perform the BSE lying down and standing up (*n*=85)	Yes	83	(97.65)
	No	2	(2.35)
I perform BSE and undergo clinical screening (*n*=85)	Yes	72	(84.71)
	No	13	(15.29)
I advise and educate my friends about the BSE and its importance	Yes	56	(12.93)
	No	377	(87.07)
If you perform the BSE, how frequent do you do it? (*n*=85)	Once in 6 months	6	(7.06)
	Once a month	21	(24.71)
	Once in 3 months	33	(38.82)
	Once a year	19	(22.35)
	Once a week	6	(7.06)
I have not performed a BSE because…	I do not think it is important	10	(2.31)
	Do not know how to do it	167	(38.57)
	I do not have symptoms	213	(49.19)
	I do not think I should touch my body in such a manner	16	(3.70)
	I do not think its efficient	27	(6.24)
If I find any abnormal changes during BSE, I will…	Pray to god	34	(7.85)
	Do nothing	29	(6.70)
	Inform family member	91	(21.02)
	Contact medical professional	279	(64.43)

BSE=breast self-examination

intervention. This is supported by a study suggesting that women perceived that a CBE performed by doctors was the only means by which BC could be screened and detected.[29]

In the present study, the majority had never performed a BSE, and only 4.85% of the entire sample performed it regularly. This is consistent with Kumarasamy, Veerakumar, Subhathra, Suga, and Murugaraj[18] who demonstrated that 18% of their sample had studied their breasts, with only 5% practicing the BSE regularly. Their study inferred that knowledge and practices among women in the rural areas of Trichy are low, marking the need for aggressive initiative and education programs regarding BC and BSE. Reasons such as lack of self-confidence in properly performing the BSE, lack of time, apprehension of finding a lump, and embarrassment of handling the breast have been reported.[30,31]

Compared to knowledge of BSE, there was relatively less practice of BSE because of reluctance and shame. Research has found knowledge and practice to be correlated with each other.[8] Only 21/85 performed BSE once a month, whereas 6/85 did it once a week. This is similar to a study showing that only 13.3% performed the exam on a monthly basis, whereas the remaining 74.4% performed it once in a while.[28] Regardless of low BSE practices, most women reported that they would contact a medical professional if they detected abnormalities.

Although the present study bridged the gap in literature regarding KAP of the rural population in Tirunelveli, it consisted of a small sample size. Because of this, the findings may not be applicable for the overall population. Furthermore, the present study did not assess the factors predicting or affecting the KAP of women in rural areas. Because of the COVID-19 pandemic, random selection of women was restricted; snowball sampling was used in this study, which has risk of selection bias.

CONCLUSION

It is evident from the present study among the rural Tirunelveli women that the knowledge on BSE is low. Although the women are aware of BC and the BSE, there is poor practice of examination. This emphasizes the need for educational initiatives to put the rural populations of India at the center of their focus, to improve KAP, and expedite the rate of early BC detection. Future studies can include BSE educational interventions to demonstrate their effect on the KAP of rural women. Both urban and rural populations can be studied henceforth to understand variations in their BSE KAP.

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Conflicts of interest

There are no conflicts of interest.

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