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Knowledge And Attitude Regarding Breast Self-Examination Among Rural Women In Kathua District: An Observational Study

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Abstract

Introduction: Breast cancer is the most common malignancy among women globally. It is a leading cause of morbidity and mortality, particularly in low- and middle-income countries, where late presentation and limited access to screening facilities contribute to poor outcomes. Early detection remains critical for reducing mortality, and Breast Self-Examination (BSE) offers a simple, cost-free, and non-invasive method particularly suited for resource-limited rural settings. Despite its potential, studies consistently show that awareness, knowledge, and attitudes toward BSE are often inadequate, creating significant barriers to timely diagnosis and treatment. The study aims to evaluate and correlate knowledge and attitude level regarding the Breast-Self Examination (BSE) and demographic details and its association among the rural women.

Methodology: An observational, descriptive cross-sectional study was conducted among 350 rural women in selected villages of Tehsil Nagri Parole, Kathua. Data were collected using a structured interview schedule on socio-demographics, knowledge, and attitudes regarding Breast Self-Examination (BSE). Descriptive findings summarized in percentage, and Chi-square tests were applied to assess associations between demographic variables, knowledge, and attitude, with significance set at $p < 0.05$.

Results: Most participants had poor to average knowledge (76%) and a predominantly negative attitude (74%) toward Breast Self-Examination (BSE). Knowledge score was significantly associated with age, education, and height, while attitude showed associations with age, diet, number of children, and family history of breast-related diseases.

Conclusion: The findings highlight the urgent need for targeted health education interventions to improve awareness and practice of BSE among rural women, thereby facilitating early detection of breast cancer.

Keywords: Attitude, Breast Self-Examination, Breast Cancer, Kathua District, Knowledge, Rural Women

Introduction

Breast cancer is the most common malignancy among women globally, with over 2.3 million new cases reported each year.[1] The incidence is steadily rising in rural populations, where limited healthcare access and low awareness often lead to delayed diagnosis and poor outcomes.[2] In India, the burden is rapidly escalating, with annual cases projected to rise from 100,000 to more than 131,000 due to demographic transitions and lifestyle changes.[3]

Risk factors for breast cancer are multifactorial, encompassing both non-modifiable and modifiable determinants. Age is a major factor, with risk rising sharply in older women, while a positive family history significantly increases susceptibility—first-degree relatives confer a 30–50% higher risk, and BRCA1/2 mutations raise lifetime risk up to 70%. Reproductive factors such as early menarche, late menopause, low parity, and delayed first childbirth substantially elevate risk, as prolonged estrogen exposure plays a central role in carcinogenesis. Modifiable lifestyle factors, including obesity, alcohol consumption, physical inactivity, and metabolic dysfunction, further contribute by promoting hormonal imbalance, chronic inflammation, and insulin resistance.[4]

Breast cancer has progressed from traditional histopathologic classification to molecular subtypes with significant prognostic and therapeutic implications. The histological classification, based on WHO criteria (ductal, lobular, etc.), provides morphological insights but limited predictive value. In contrast, molecular subtyping through gene expression or immunohistochemistry offers greater clinical utility: Luminal A (ER+, low grade, best prognosis), Luminal B (ER+, higher grade, HER2±, intermediate prognosis), HER2-enriched (HER2+, HR–, responsive to trastuzumab), Basal-like/Triple-Negative (TNBC) (ER–, PR–, HER2–, aggressive, poorer prognosis, often linked to BRCA1 mutations.[5] and Claudin-low (a subset

overlapping with TNBC, characterized by low claudin expression, mesenchymal traits, and poor differentiation).[6]

Breast Self-Examination (BSE) is a simple, non-invasive, and cost-free method that enables women to detect early breast changes.[7] While not a substitute for mammography, it fosters self-awareness and timely medical consultation, particularly in low-resource rural settings. Its effectiveness, however, largely depends on women's knowledge, correct technique, and positive attitudes toward regular practice.

Despite the high burden of breast cancer in rural India, few community-based studies have assessed women's knowledge and attitudes toward breast self-examination (BSE) in areas like Kathua. Low awareness, cultural barriers, and limited literacy often hinder BSE practice, delaying early detection. Assessing knowledge and attitudes is therefore crucial for designing culturally sensitive health education and improving early diagnosis in underserved populations.The study aims to evaluate and correlate knowledge and attitude level regarding the Breast-Self Examination (BSE) and demographic details and its association among the rural women.

Methodology

Study Design:

The study employed an observational, descriptive cross-sectional study design to assess knowledge and attitude regarding Breast Self-Examination (BSE) among rural women in Kathua district. Socio-demographic details collected using structured validated interview. Assessment of knowledge and attitude regarding BSE was done using validated tool. Written informed consent was obtained from all enrolled participants and responses were documented systematically. This design ensured active participation, minimized bias, and provided a reliable assessment of BSE awareness and perceptions in the rural population.

Study Setting:

The proposed study will be conducted at selected villages of Tehsil Nagri Parole, Kathua district. The researcher selected this setting for the availability of samples, familiarity with the setting, and economic possibility of conducting the research.

Study Population:

The study population comprised females from rural areas of selected villages in Tehsil Nagri Parole, District Kathua, who met the inclusion and exclusion criteria.

Sample Size:

Total 350 women were enrolled according to predefined inclusion and exclusion criteria. The sample size is calculated using Cochran's Formula to obtain a sample size that is best representative of the population.

Eligibility Criteria

Females aged 20–50 years who are willing to participate, provide consent, can read and understand Hindi or Dogri, and are available during data collection will be included. Excluded are males, females who participated in the pilot study, and those with any pathological breast disorder.

Data Collection and Analysis

Data were collected from December 2023 to December 2024 after obtaining formal permission from the district administration. Rapport was established, informed consent obtained, and interviews conducted to record demographic details along with knowledge and attitude regarding Breast Self-Examination (BSE). Data were coded, entered into Microsoft Excel, and analyzed using descriptive statistics and inferential statistics (Chi-square test) with significance set at $p < 0.05$.

Ethical Consideration:

Permission to conduct the study was obtained from the administrative officer of Tehsil Nagri Parole, District Kathua. Informed consent was taken from all participants after providing a complete explanation of the research purpose and the intervention in a language they could understand. Participants were assured that the intervention would not cause any harm, and no invasive procedures were involved. They were granted full autonomy to decide on their participation, and data collection was scheduled according to their convenience. Confidentiality of all information was strictly maintained throughout the study.

Results:

Frequency and Distribution based on Demographic Variables of participants among the rural population (n=350)

The age distribution showed that most participants were in middle adulthood, with the largest group being 26–31 years (25.14%), followed by 32–37 years (23.43%). Religion-wise, Hindus formed the majority (40.86%), followed by Muslims (27.71%), Sikhs (16.29%), and Christians (15.14%), reflecting notable diversity. Most women attained menarche at a normal physiological age, predominantly between 10–14 years (72.86%). A majority also reported regular menstrual cycles (76.57%).

In terms of education, the highest proportion had completed secondary schooling, with 22.00% having studied up to 12th grade and 21.71% up to 10th grade, while 19.43% had attained graduation and 16.57% had no formal education. Regarding family structure, joint families were most common (37.71%), followed by nuclear families (30.00%). Dietary habits indicated non-vegetarianism as the most frequent (36.29%), with similar proportions of vegetarians (30.00%) and eggetarians (29.14%), while small groups were vegans (4.57%).

Healthcare professionals were the principal source of BSE knowledge (45.14%), followed by mass media (28.29%) and family/friends (23.43%). Family size was moderate, with half of the women (50.00%) having two children and 30.57% having one child. About one-third (30.57%) reported a family history of breast-related diseases, while the majority (69.43%) did not. Most participants (59.71%) had not reached menopause, though 24.57% were unsure of their status and 15.71% were postmenopausal.

Contraceptive pill use was reported by 32.57%, with varied durations of usage; the majority (67.43%) had never used them. Smoking was relatively uncommon, with only 6.29% of respondents identifying as smokers. Height distribution showed that 38.86% were below 160 cm, while 30.00% fell in the 160–164 cm range. In terms of weight, the largest proportion (29.43%) weighed between 65–74 kg.

BMI assessment indicated that 44.29% had a normal weight, 22.86% were overweight, 19.43% underweight, and 13.43% obese. Thus, while the largest share maintained a normal BMI, considerable proportions were either underweight or overweight/obese.

Table no. 01: Assessment of Level of Knowledge regarding the Breast – Self Examination (BSE) among rural population (n=350)

Knowledge Grade	Score	Frequency	Percentage (%)
Poor	1-6	139	39.71%
Average	7-12	127	36.29%
Good	13-18	72	20.57%
Excellent	19-25	12	3.43%
Total		350	100

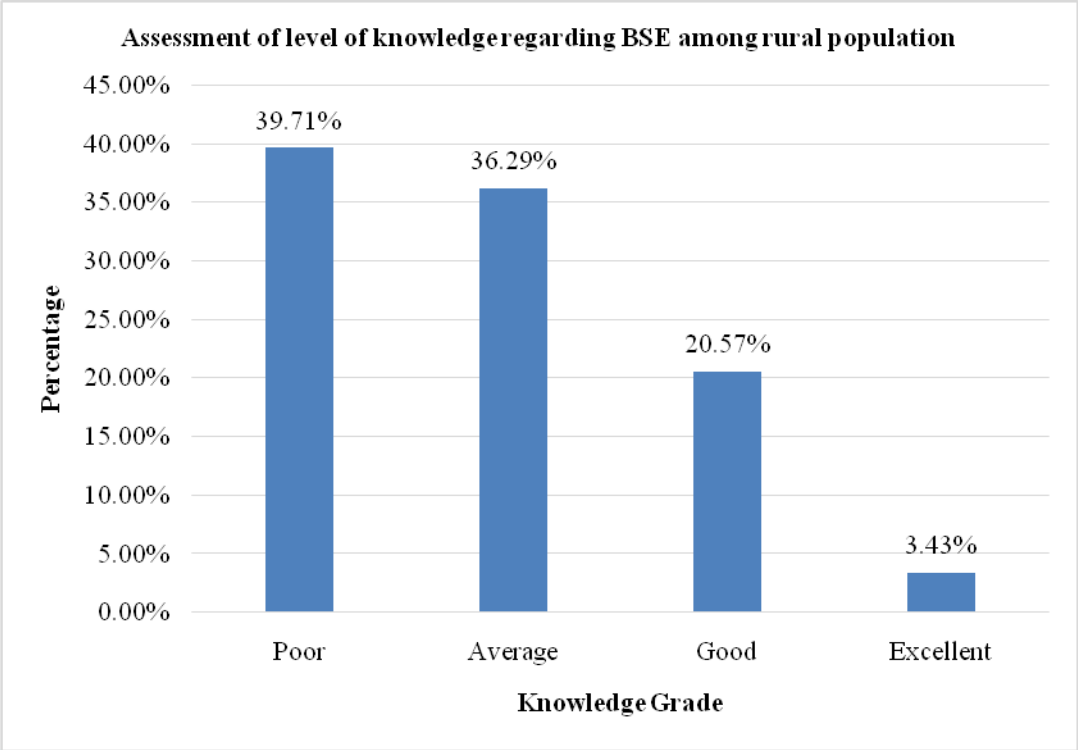

Figure No. 01: Assessment of Level of Knowledge regarding the Breast – Self Examination (BSE) among rural population

Table 01 and figure no. 01: The assessment of knowledge regarding Breast Self-Examination (BSE) revealed that a substantial proportion of participants had inadequate awareness. Out of the total 350 respondents, the largest group, 139 women (39.71%), fell into the poor knowledge category, indicating very limited understanding of BSE. Another 127 participants (36.29%) demonstrated average knowledge, suggesting a partial awareness but with evident gaps in comprehension and practice. A smaller segment, 72 women (20.57%), exhibited good knowledge, reflecting a more accurate understanding and awareness of BSE practices. Only a very minor proportion, 12 participants (3.43%), achieved the excellent knowledge level, representing a thorough and well-rounded awareness about BSE. Overall, the findings highlight that while some women possess a moderate to good level of knowledge; the majority remains inadequately informed, underscoring the need for targeted educational interventions to strengthen awareness and proper practice of BSE among rural women.

Table No. 02: Assessment of Level of Attitude regarding the BSE among rural population (n=350)

Attitude Category	Level of Attitude	Frequency	Percentage (%)
Positive attitude	55-80	91	26.00%
Negative attitude	22-54	259	74.00%
Total		350	100

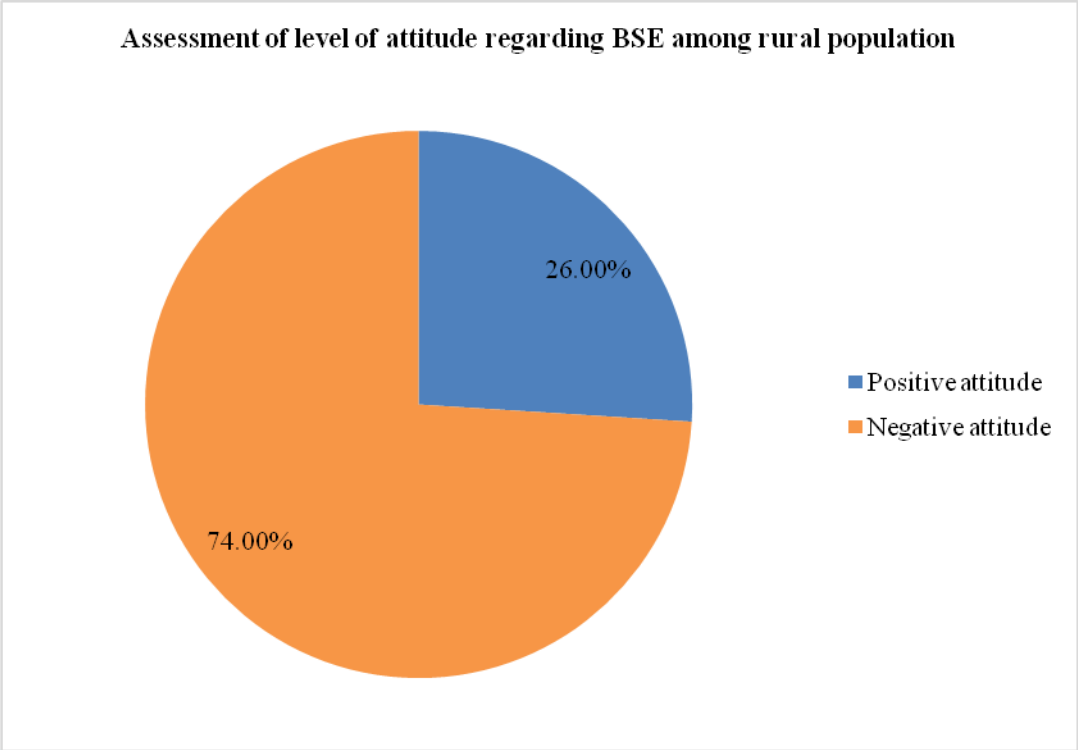

Figure No. 02: Assessment of Level of Attitude regarding the BSE among rural population

Table No. 02 and figure no. 02: The assessment of participants' attitudes toward Breast Self-Examination (BSE) revealed that a clear majority exhibited negative perceptions. Out of 350 respondents, 259 women (74.00%) scored between 22–54, categorizing them as having a negative attitude toward the practice. In contrast, only 91 participants (26.00%) scored within the range of 55–80, indicating a positive attitude. These findings highlight that although BSE is a simple, non-invasive, and cost-effective method for early detection of breast abnormalities, the uptake of a favorable outlook remains limited among the rural women studied. The predominance of negative attitudes suggests the presence of barriers such as fear, misconceptions, cultural influences, or lack of confidence in performing BSE accurately. This underscores the need for targeted awareness programs and culturally sensitive interventions to foster a more positive mindset and encourage the adoption of BSE as a preventive health behavior

Table No. 03: Association between demographic detail and knowledge score regarding Breast - Self Examination (BSE) among rural population (n=350)

Demographic Variables	Frequency	Level of knowledge				df	P value	χ^2 value	Result
		Poor	Average	Good	Excellent				
Age Group (years)									
20-25 years	56	21	17	12	6	12	0.0003	35.71	S
26-31 years	88	26	38	20	4				
32-37 years	82	28	26	27	1				
38-43 years	67	36	25	5	1				
44-50 years	57	28	21	8	0				
Religion									
Hindu	143	65	48	23	7	9	0.41	9.29	NS
Muslim	97	35	37	21	4				
Sikhism	57	22	22	13	0				
Christian	53	17	20	15	1				
Age at Menarche (Years)									
<10	29	8	11	10	0	9	0.27	11.14	NS
10-12	133	55	46	29	3				
12-14	122	50	48	17	7				
>14	66	26	22	16	2				
Menstrual Cycle									
Regular	268	105	96	58	9	3	0.85	0.80	NS
Irregular	82	34	31	14	3				
Education status of participant									
No formal education	58	39	17	2	0	12	<0.001	47.023	S
5th pass	72	28	28	15	1				
10th pass	76	36	27	12	1				
12th pass	77	21	29	23	4				
Graduate or more	67	15	26	20	6				
Type of Family									
Nuclear family	105	46	39	17	3	9	0.17	12.83	NS

Joint family	132	52	45	32	3				
Extended family	62	23	18	16	5				
Single parent family	51	18	25	7	1				
Food habits									
Vegetarian	11	38	44	20	3	9	0.72	6.24	NS
Non-vegetarian	16	53	40	29	5				
Eggetarian	6	39	37	22	4				
Vegans	2	9	6	1	0				
Source of previous knowledge gained related to BSE									
Mass media	99	40	40	18	1	9	0.30	10.62	NS
Healthcare professionals	158	68	47	34	9				
Friends/Family members	82	26	36	18	2				
Others	11	5	4	2	0				
Number of children									
0	24	14	6	4	0	9	0.55	7.83	NS
1	107	37	40	26	4				
2	175	69	63	37	6				
3 or more	44	19	18	5	2				
Family history of breast-related diseases									
Yes	107	44	38	21	4	3	0.98	0.21	NS
No	243	95	89	51	8				
Are you currently experiencing menopause?									
Yes, I am menopausal.	70	24	28	16	2	6	0.37	6.41	NS
No, not yet	209	88	73	38	10				
I am unsure	71	27	26	18	0				
Use of contraceptive pills									
Yes	114	46	40	25	3	3	0.91	0.55	NS
No	236	93	87	47	9				

Smoking habits									
Yes	22	9	10	2	1	3	0.54	2.14	NS
No	328	130	117	70	11				
Height (cms)									
<160	136	55	40	33	8	9	0.023	19.26	S
160-164	105	41	38	26	0				
165-170	41	14	20	4	3				
>170	68	29	29	9	1				
Weight (in Kgs)									
<45	21	6	7	7	1	15	0.49	14.42	NS
45-54	61	23	25	8	5				
55-64	74	28	26	17	3				
65-74	103	40	41	21	1				
75-85	82	38	24	18	2				
>85	9	4	4	1	0				
BMI (in Kg/m^2)									
Underweight	68	23	29	12	4	9	0.30	10.59	NS
Normal Weight	155	58	58	33	6				
Overweight	80	40	26	14	0				
Obese	47	18	14	13	2				

Table 03: The association between demographic characteristics and levels of knowledge regarding Breast Self-Examination (BSE) revealed several significant findings. Age was strongly associated with knowledge (χ^2=35.71, p=0.0003), with women aged 26–31 years demonstrating comparatively higher proportions of average and good knowledge, while those in the extremes of younger (20–25 years) and older age groups (38–50 years) had higher frequencies of poor knowledge. Education status also showed a highly significant association with knowledge levels (χ^2=47.02, p<0.001). Women with no formal education had predominantly poor knowledge, whereas those educated up to 12th grade or beyond graduation were more likely to demonstrate good to excellent knowledge.

In terms of anthropometric characteristics, height was found to be significantly associated with knowledge (χ^2=19.26, p=0.023). Participants below 160 cm tended to cluster in the poor knowledge group, while taller individuals, particularly those in the 165–170 cm range, showed relatively better distributions across average and good knowledge categories. Conversely, other anthropometric variables, including weight (χ^2=14.42, p=0.49) and BMI (χ^2=10.59, p=0.30), did not show significant associations.

No statistically significant associations were observed between knowledge levels and religion (χ^2=9.29, p=0.41), age at menarche (χ^2=11.14, p=0.27), menstrual cycle regularity (χ^2=0.80, p=0.85), type of family (χ^2=12.83, p=0.17), food habits (χ^2=6.24, p=0.72), or source of previous knowledge of BSE (χ^2=10.62, p=0.30). Similarly, reproductive and lifestyle factors, such as number of children (χ^2=7.83, p=0.55), family history of breast disease (χ^2=0.21, p=0.98), menopausal status (χ^2=6.41, p=0.37), contraceptive pill use (χ^2=0.55, p=0.91), and smoking habits (χ^2=2.14, p=0.54), also showed no significant associations with knowledge levels. Overall, the findings emphasize that age, education, and height are the primary determinants significantly influencing knowledge of BSE among rural women, while most reproductive, lifestyle, and biomedical variables had no measurable impact.

Table No. 04: Association between demographic detail and Attitude score regarding Breast – Self Examination (BSE) in rural population (n=350)

Demographic Variables	**Frequency**	Level of attitude		**Df**	**P value**	**χ^2 value**	**Result**
		Positive	Negative				
Age Group (years)							
20-25 years	**56**	**21**	**35**	**4**	0.01	13.26	S
26-31 years	**88**	**26**	**62**				
32-37 years	**82**	**22**	**60**				
38-43 years	**67**	**17**	**50**				
44-50 years	**57**	**5**	**52**				
Religion							
Hindu	**143**	**35**	**108**	3	0.21	4.56	NS
Muslim	**97**	**20**	**77**				
Sikhism	**57**	**20**	**37**				
Christian	**53**	**16**	**37**				
Age at Menarche (Years)							
<10	**29**	**12**	**17**	3	0.19	4.65	NS
10-12	**133**	**31**	**102**				
12-14	**122**	**29**	**93**				
>14	**66**	**19**	**47**				
Menstrual Cycle							
Regular	**268**	**75**	**193**	1	0.13	2.34	NS
Irregular	**82**	**16**	**66**				
Education status of participant							

No formal education	**58**	**16**	**42**	4	0.44	3.74	NS
5th pass	**72**	**20**	**52**				
10th pass	**76**	**16**	**60**				
12th pass	**77**	**25**	**52**				
Graduate or more	**67**	**14**	**53**				
Type of Family							
Nuclear family	**105**	**31**	**74**	3	0.55	2.13	NS
Joint family	**132**	**35**	**97**				
Extended family	**62**	**12**	**50**				
Single parent family	**51**	**13**	**38**				
Food habits							
Vegetarian	**105**	**27**	**78**	3	0.025	9.37	S
Non- vegetarian	**127**	**24**	**103**				
Eggetarian	**102**	**37**	**65**				
Vegans	**16**	**3**	**13**				
Source of previous knowledge gained related to Breast Self-Examination							
Mass media	**99**	**27**	**72**	3	0.13	5.65	NS
Healthcare professionals	**158**	**38**	**120**				
Friends/Family members	**82**	**26**	**56**				
Others	**11**	**0**	**11**				
Number of children							
0	**24**	**7**	**17**	3	0.0077	11.89	S
1	**107**	**39**	**68**				
2	**175**	**32**	**143**				
3 or more	**44**	**13**	**31**				
Family history of breast-related diseases							
Yes	**107**	**20**	**87**	1	0.03	4.28	S
No	**243**	**71**	**172**				
Are you currently experiencing menopause?							
Yes, I am menopausal.	**70**	**17**	**53**	2	0.24	2.82	NS
No, not yet	**209**	**50**	**159**				
I am unsure	**71**	**24**	**47**				
Use of contraceptive pills							

Yes	**114**	**34**	**80**	1	0.27	1.29	NS
No	**236**	**57**	**179**				
Smoking habits							
Yes	**22**	**8**	**14**	1	0.25	1.31	NS
No	**328**	**83**	**245**				
Height (in cms)							
<160	**136**	**35**	**101**	3	0.24	4.25	NS
160-164	**105**	**30**	**75**				
165-170	**41**	**14**	**27**				
>170	**68**	**12**	**56**				
Weight (In kgs)							
<45	**21**	**3**	**18**	5	0.15	8.02	NS
45-54	**61**	**16**	**45**				
55-64	**74**	**28**	**46**				
65-74	**103**	**23**	**80**				
75-85	**82**	**19**	**63**				
>85	**9**	**2**	**7**				
BMI (in Kg/m^2)							
Underweight	**68**	**17**	**51**	3	0.87	0.69	NS
Normal Weight	**155**	**42**	**113**				
Overweight	**80**	**22**	**58**				
Obese	**47**	**10**	**37**				

Table No.04: The analysis of demographic and reproductive variables revealed significant associations between attitude toward Breast Self-Examination (BSE) and certain factors. Age showed a highly significant association (p=0.01), with younger women (20–25 years) displaying comparatively more positive attitudes, while negative attitudes predominated among the older groups, particularly those aged 44–50 years. Food habits also demonstrated a significant relationship (p=0.025), with eggetarians showing a more favorable attitude compared to vegetarians, non-vegetarians, and vegans. The number of children was another strongly associated factor (p=0.0077), with women having one child exhibiting more positive attitudes, whereas those with two or more children showed predominantly negative attitudes. Additionally, family history of breast-related diseases was significantly linked to attitude (p=0.03), as women with a positive family history were more likely to report supportive attitudes toward BSE compared to those without such history.

On the other hand, no significant associations were found with religion, age at menarche, menstrual cycle pattern, education level, type of family, source of knowledge, menopausal status, contraceptive use, smoking habits, height, weight, or BMI, as reflected by higher p-values in these categories. For instance, despite healthcare professionals being the predominant source of knowledge, this did not translate into a significant difference in attitude. Similarly, anthropometric factors (height, weight, BMI) and reproductive variables such as age at menarche and menopausal status showed no statistical influence on attitudes. Overall, the findings highlight that attitude toward BSE was shaped more by sociodemographic and experiential factors namely age, parity, food habits, and family history of breast-related disease rather than purely biological, educational, or lifestyle variables.

Discussion

The present study assessed knowledge and attitudes toward Breast Self-Examination (BSE) among a rural population. Findings showed that 39.71% of participants had poor knowledge, while only 3.43% demonstrated excellent knowledge. A majority (74%) also reported negative attitudes toward BSE, despite its significance as a simple, cost-effective method for early detection of breast cancer. Analysis revealed that age, education status, and height were significantly associated with knowledge, consistent with previous studies highlighting younger age and higher education as predictors of better awareness Yerpude et al. (2013) and Al-Dubai et al. (2012).[8,9] Attitudes, however, were influenced by age, food habits, number of children, and family history of breast-related conditions. Younger women and those with a family history displayed a more positive outlook, echoing findings by Birhane et al. (2017).[10] Interestingly, education status was not significantly linked to attitudes in this study, differing from earlier reports (Khokhar, 2009; Akhtari-Zavare et al., 2015), and suggesting that cultural and contextual factors may weigh more heavily in shaping rural women's perceptions.[11,12] The coexistence of moderate knowledge with largely negative attitudes underlines the need for interventions that go beyond information-sharing to also address misconceptions, fears, and cultural barriers. Evidence from earlier research indicates that community-based education and peer-led initiatives can enhance both awareness and practice of BSE (Ameer et al., 2014, Avci 2008).[13,14]

Thus, structured awareness campaigns integrated into primary care could be particularly beneficial. Finally, the lack of associations with biomedical factors such as contraceptive use, BMI, and menstrual history suggests that sociodemographic and psychosocial elements play a more decisive role in knowledge and attitudes. Health promotion programs should therefore emphasize empowerment, accessible education, and supportive community involvement rather than focusing solely on biological risk stratification.

Conclusion

The study found that rural women had inadequate knowledge and negative attitudes toward Breast Self-Examination (BSE). Knowledge was significantly linked with age, education, and height, while attitudes were influenced by age, diet, number of children, and family history of breast-related diseases. These results highlight the need for targeted community-based education and healthcare professional involvement to enhance awareness, foster positive attitudes, and promote early detection of breast cancer.

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Conflict of Interest: The author declares that there is no conflict of interest associated with this study

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