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Exploring Awareness on Risk Factors, Symptoms, and Screening Challenges of Breast Cancer among Married Women in Selected Districts of West Bengal

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ABSTRACT

Background: Breast cancer is one of the leading and concerning cancer types among women. In India, due to poor awareness level among women, breast cancer mortality is high. This study aims to investigate married women's awareness on risk factors, symptoms of breast cancer and various factors (socio-demographic, health-system and access factors, cultural factors, health status and personal history, psychological factors) that influence breast cancer screening for married women in selected districts of West Bengal.

Methods: The study used a quantitative approach. The study was carried out in the districts of Kolkata and Howrah in West Bengal. The research design was descriptive. The sample size was 141. 69 respondents were chosen from Kolkata, and 72 respondents were chosen from Howrah. Only married women aged between 18 and 49 years and has not been going through breast cancer treatment were chosen for this study.

Results: The awareness of breast cancer, including symptoms, causes, and risk factors among the married women were poor, intersecting with their level of education, income, and age. Breast cancer screening among married women has been impacted by socio-demographic, health system, cultural factors, health status and personal history. Only 15% respondents were aware of breast cancer screening; however, the performance of breast cancer screening was 12%, indicating poor awareness and participation in breast cancer screening. The situation of Kolkata is better in terms of awareness of breast cancer and breast cancer screening than in the Howrah.

Conclusion: This study recommends holistic public health policies, district-specific regional interventions in Kolkata and Howrah, and strengthened community-based awareness programs and health-education initiatives to address the gaps in knowledge and promote early detection and screening practices among married women.

Keywords: Breast Cancer, Married Women, Breast Cancer Screening

INTRODUCTION

The global cancer scenario reveals a rapidly increasing disease burden, spread by aging populations, lifestyle patterns, and inequality in healthcare access. "There are approximately 20 million new cancer cases and over 10 million deaths globally in 2025, with 53.5 million people living within five years of a cancer diagnosis" (World Health Organization, 2024). The five leading cancer types by incidence (new cases) are: Lung cancer, Breast cancer, Colorectal cancer,

Prostate cancer, Stomach cancer (American Association for Cancer Research, 2025).

Approximately 2.3 million women were diagnosed with breast cancer in the year of 2022, and 67000 deaths are observed in the following year (WHO,2025). In low Human Development Index countries, 1 in 27 women diagnosed, yet 1 in 48 is dies, due to limited early detection and accessibility problem with treatment (Freihat et al., 2025).The most rapid increases will occur in low- and medium-Human Development Index countries, where cancer mortality is also nearly to double (World Health Organization, 2024).While survival rates improve in developed nations with screening and advanced therapies, cancer remains a rising global health crisis.

REVIEW OF LITERATURE

Jagtap et al. (2025) analyzed that the acceptance of screening was not significantly affected by socio-demographic factors, highlighting low awareness and acceptability of breast cancer screening among participants.

Gupta et al. (2025) highlights the need for financial risk protection against outpatient cancer treatment due to the high financial burden and emphasizes the importance of improving breast cancer outcomes through early diagnosis and affordable access to treatment.

Yadav et al. (2025) examined the barriers of breast cancer screening including perceived non-seriousness, financial constraints, and embarrassment. Interventions are needed to increase awareness, improve access, and reduce stigma for timely treatment.

Singh and Kumar (2024) assessed participants have a positive attitude towards breast cancer screening, but practice levels of breast self-examination were very low. More than half of the participants had poor knowledge about breast cancer, which is linked to low educational attainment.

Women in North India had limited detailed knowledge of breast cancer, with some unaware of the term or linking it only to lumps. Misconceptions were widespread, including beliefs that tight bras, synthetic clothing, or injuries cause breast cancer (Ghugare, 2025).

Hamid and Roy (2025) identified significant barriers of breast cancer awareness: neglect of early symptoms, societal stigma, and financial fears.

In the International Journal of Breast Cancer, a review highlights the urgent need for screening techniques to address the rising breast cancer incidence in India (Weerarathna et al.,2024).

West Bengal stood in the third-highest position in new breast cancer cases in the year 2023 (Satesman, 2024).

Mohan and Thulaseedharan (2023) highlighted those Working women with higher education had 10 times higher odds of practicing BSE compared to homemakers.

Pal et al. (2021) highlighted that knowledge about breast cancer among participants and awareness regarding breast cancer risk factors were adequate, but when it comes to women practising self-examination, it was only 27.7% of the total population.

Kathrikolly et al. (2020) explored persistent fear of treatment costs and social stigma related to breast cancer, gender discrimination, privacy concerns in joint families, and the presence of male healthcare providers inhibiting women from seeking screening.

Sarkar et al. (2020) analyzed significant risk factors for breast cancer included age, education, marital status, food habits, physical activity, age of menarche, menstrual type, menopause, marital age, and breastfeeding history.

According to Breast Cancer India (2020), breast cancer is one of the most common cancers in Kolkata, accounting for 25.4% of all cancer cases in women.

Pramanick et al. (2020) investigated breast cancer risk factors among women in Kolkata, defined nine factors associated, including family history, chest X-ray exposure, high BMI, and tobacco chewing.

Gupta et al. (2020) reviewed the low level of awareness and literacy among Indian

women, irrespective of socio-economic and educational background.

Objectives of the Study

- To explore the awareness (symptoms, risk factors, and causes) of breast cancer among married women in selected districts of West Bengal.
- To understand the various factors, influence breast cancer screening for married women in selected districts of West Bengal.

METHODOLOGY

This study employed a descriptive research design, focusing on a sample of 141 married women aged 18-49 selected through purposive sampling from the urban districts of Kolkata (69) and Howrah (72). The criteria included married women who were not currently undergoing breast cancer treatment. Data was collected through an interview schedule, following strict ethical protocols.

RESULTS

The findings of the study have been presented in 3 distinct sections. Section I presents the Socio-demographic profile of the respondents. Section II describes the awareness (symptoms, risk factors, and causes) of breast cancer among married women in selected districts of West Bengal**.** Section III comprises factors influencing breast cancer screening: socio-demographic, health-system and access factors, cultural factors, health status and personal history, and psychological factors.

Section I Socio-demographic Profile of the Respondents

Table 1 showed the socio-demographic profile of the respondents. The findings indicated that slightly more than half of the respondents (51%) were from Howrah, while 49% were from Kolkata. In terms of age, the majority of respondents were concentrated in the middle age groups, particularly 38-41 years (26%), whereas very few respondents (1%) belonged to the youngest age group. With regard to religion, the majority of respondents were Hindu (65%), followed by Muslims (28%). Very few respondents belonged to Christian (6%) and Buddhist (1%) communities. In terms of caste composition, most respondents belonged to the general category (66%), while a notable proportion was from the Scheduled Castes (24%). Few respondents belonged to Other Backward Classes (9%) and very few were from Scheduled Tribes (1%). Family structure findings showed that the majority of respondents (61%) lived in nuclear families, while 39% belonged to joint families. Most respondents had medium-sized families (4-6 members, 54%), whereas a few had smaller or larger family sizes. Educational attainment revealed that the majority of respondents had completed graduation (45%), followed by higher secondary education (31%). A smaller proportion had secondary education (13%), while very few had only primary or no formal education (1% each). Only a limited number had completed post-graduation (9%). In terms of employment status, more than half of the respondents (56%) were unemployed, indicating that unemployment was higher than employment (44%). Among those who were employed, the majority worked in the private sector (60%), followed by government employment (26%). Few respondents were engaged in business (10%), and very few were daily wage workers (1%) or involved in other sectors (3%). Looking at the occupational status of husbands, the majority were employed in either the private (38%) or government sector (36%). A smaller proportion was self-employed (21%), while very few were daily wage earners (4%) or unemployed (1%). Regarding monthly household income, most respondents fell within the lower to middle-income categories, particularly in the ₹20,001-₹30,000 range (42%). A smaller proportion was in higher income groups, and very few reported income above ₹50,000 (6%). In terms of age at marriage, the majority of respondents were married between 26-30 years (63%). A smaller proportion married between 20-25 years

(23%), while very few married before 20 years or after 30 years. Regarding duration of marriage, a slightly higher proportion had been married for more than 15 years (28%), followed by those married for 6–10 years (26%) and 11-15 years (23%). When examining family composition in terms of children, the majority of respondents had one child (52%), followed by those with two children (26%). A smaller proportion had no children (20%), while very few had three or more children (2%). Most respondents reported giving birth to their first child between 26-30 years (48%), whereas very few had their first childbirth at a very early age (1%). Breastfeeding practices indicated that the majority of respondents (80%) had breastfed their children. Among them, most had breastfed for 6-12 months (56%), while a smaller proportion continued for more than 12 months (30%). Few respondents reported shorter durations (14%), and a minority (20%) did not breastfeed. In relation to health insurance coverage, the findings showed that the majority of respondents (54%) did not have any health insurance. Less than half (46%) reported having coverage. Among those who were insured, very few had cancer-related insurance (14%), while the majority (86%) did not have such coverage.

Table 1 – Socio-demographic Profile of the Respondents

Variable	Frequency	Percent (%)
District		
Kolkata	69	49
Howrah	72	51
Age		
18 years-21 years	1	1
22 years-25 years	3	2
26 years-29 years	13	9
30 years-33 years	9	6
34 years-37 years	17	12
38 years-41 years	37	26
42 years-45 years	35	25
46 years-49 years	26	19
Religion		
Hindu	92	65
Muslim	39	28
Christian	9	6
Buddhist	1	1
Caste		
General	93	66
OBC	12	9
SC	34	24
ST	2	1
Family Type		
Nuclear	86	61
Joint	55	39
No of Family Members		
1-3 members	59	41
4-6 members	76	54
7-9 members	5	4
10 or more members	1	1
Education		
Illiterate	2	1
Primary Education	1	1
Secondary Education	19	13
Higher Secondary Education	43	31
Graduation	64	45
Postgraduation	12	9

Employment Status		
Employed	62	44
Unemployed	79	56
Occupation Type		
Daily wage Worker	1	1
Business	6	10
Private Sector Employee	37	60
Government Employee	16	26
Others	2	3
Husband's Occupation		
Unemployed	2	1
Daily wage Worker	6	4
Self-employed	29	21
Private Sector Employee	54	38
Government Employee	50	36
Monthly Income (INR)		
Rs. 10,001-Rs. 20,000	35	25
Rs. 20,001-Rs. 30,000	59	42
Rs. 30,001-Rs. 40,000	26	18
Rs. 40,001-Rs. 50,000	12	9
Above Rs. 50,000	9	6
Age at Marriage		
Less than 20 years	8	6
20 years-25 years	32	23
26 years-30 years	89	63
More than 30 years	12	8
Duration of Marriage		
Less than 2 years	7	5
2 years-5 years	26	18
6 years-10 years	36	26
11 years-15 years	33	23
More than 15 years	39	28
Number of Children		
None	28	20
1	74	52
2	36	26
3 or more	3	2
Age at first birth		
Less than 20 years	1	1
20 years-25 years	37	33
26 years-30 years	54	48
More than 30 years	21	18
Breastfeeding		
Yes	113	80
No	28	20
Duration of Breastfeeding		
Less than 6 months	16	14
6 months-12 months	63	56
More than 12 months	34	30
Insurance Coverage		
Yes	65	46
No	76	54
Insurance coverage for Cancer		
Yes	9	14
No	56	86

Section II Awareness (symptoms, risk factors, and causes) of breast cancer among married women

Table 2 showed the level of awareness of breast cancer among the respondents. The findings indicated that the majority of respondents (96%) had heard about breast cancer, while very few (4%) had never heard about it. In terms of sources of information, family emerged as the most common source (27%), followed by television (21%) and friends (20%). The internet also played a notable role (18%), while newspapers were a less common source (14%). Regarding awareness of symptoms, the majority of respondents identified common signs such as lump(s) in the breast(s) (26%), followed by a change in size or shape of the breast (22%) and pain in the breast area (19%). Awareness of lumps under the armpit (11%) was comparatively lower. However, knowledge of less visible or less discussed symptoms, such as nipple discharge, thickening or swelling, skin irritation, redness, or nipple pain, was very low, ranging between 3% to 7%. When looking at awareness of risk factors, the findings showed that the majority of respondents (61%) did not have any awareness, while only 39% were aware. Among those who identified risk factors, smoking (23%) and alcohol intake (15%) were the most commonly mentioned. A smaller proportion identified family history (13%) and late menopause (13%). Few respondents mentioned dense breasts (10%) and late age at first childbirth (7%). Very few were aware of other risk factors, such as lack of breastfeeding (5%), non-cancerous breast diseases (6%), exposure to radiation (2%), and hormonal replacement therapy (1%). In terms of perceived causes of breast cancer, the majority of respondents identified genetic factors (42%) as the main cause. A smaller proportion attributed it to environmental or occupational factors (15%) and hormonal or reproductive factors (14%). Few respondents associated breast cancer with injury to the breast (11%), lifestyle factors (9%), and psychosocial or social determinants (9%).

Table 2– Awareness of Breast Cancer among the Respondents

Variable	Frequency	Percent (%)
Heard about Breast Cancer		
Yes	136	96
No	5	4
Source of Information		
TV	90	21
Newspaper	60	14
Family	117	27
Friends	86	20
Internet	77	18
Awareness on Symptoms		
Lumps in the breast	126	26
Lumps under the armpit	52	11
Change in size or shape of breasts	107	22
Pain in any area of the breasts	91	19
Nipple discharge other than breastmilk, including blood	26	5
Thickening or swelling in the breast	17	3
Irritation or dimpling in breast skin	16	3
Redness or flaky skin in the nipple area or the breast	21	4
Pulling in of the nipple or pain in the nipple area	37	7
Awareness on Risk Factors		
Yes	55	39
No	86	61
Risk Factors Identified by the Respondents		
Early menarche	14	5
Late menopause	34	13
Family history of breast cancer	35	13

Smoking	62	23
Alcohol Intake	41	15
Dense breasts	26	10
Late age at first birth	20	7
No breastfeeding	13	5
Detected with any noncancerous breast diseases	15	6
Exposed to radiation	6	2
Hormonal replacement therapy	4	1
Awareness on Causal Factors		
Genetic Factors	94	42
Hormonal and Reproductive Factor	31	14
Environmental or Occupational Factor	33	15
Psychosocial or Social Determinants	21	9
Lifestyle Factors	19	9
Injury to the breasts	24	11

Section III Factors Influencing Breast Cancer Screening

Table 3 showed the major factors influencing breast cancer screening of the respondents. The findings indicated that the majority of respondents (62%) did not have any family history of cancer, while a smaller proportion (38%) reported such a history. Among those with a family history, a considerable proportion reported other types of cancers (47%), followed by breast cancer (24%) and ovarian cancer (23%), while very few reported cervical cancers (6%). In terms of preventive health practices, the majority of respondents (76%) did not engage in regular health check-ups, while only a small proportion (24%) reported such practices. Very few respondents (9%) reported detection of any breast abnormalities, whereas the vast majority (91%) did not report any such issues. More than half of the respondents (58%) expressed some level of concern about cancer, while a considerable proportion (42%) did not have any such concerns. However, awareness regarding early detection of breast cancer was low, with the majority (70%) lacking awareness, and only a limited proportion (30%) being aware. Similarly, awareness of breast cancer screening was very low. The majority of respondents (85%) had no awareness, while only a small proportion (15%) was aware of screening methods. Among those who were aware, knowledge was uneven, few knew about mammography and clinical breast examination, while some had awareness of breast self-examination. Very few respondents had comprehensive knowledge of all screening methods. Practice of screening was also very limited. Only 17 respondents had ever undergone any form of screening. Among them, mammography (41%) was the most commonly practiced method, followed by breast self-examination (35%) and clinical breast examination (24%). Regarding healthcare-seeking behavior, slightly more than half of the respondents (52%) did not have a usual pattern of seeking healthcare, while 48% reported some form of regular practice. The majority visited a doctor only when they were ill (62%), while few visited occasionally (28%), and very few (10%) went for regular check-ups. Doctor's advice for breast cancer screening was also minimal. The vast majority of respondents (94%) had never been advised by a doctor to undergo screening, while very few had received such advice. Even among those advised, more than half did not follow through with screening practices. The findings also highlighted multiple factors influencing breast cancer screening. Cultural factors (28%), healthcare access issues (27%), and socio-demographic factors (27%) were identified as major influences. Personal history (14%) and psychological factors (10%) were reported by fewer respondents. In terms of cultural barriers, respondents pointed to several issues such as discomfort with male doctors (24%), lack of knowledge (22%), low prioritization of women's health (19%), lack of autonomy (15%),

misconceptions and myths (11%), and stigma or taboo (9%). Challenges in accessing healthcare included poor awareness of available services (24%), limited infrastructure (19%), transportation difficulties (16%), and limited insurance coverage (14%). Very few respondents identified caregiving responsibilities as a barrier (7%). Psychological barriers were also significant. The most common factor was social stigma associated with cancer (29%), followed by fear of criticism (27%) and fear of diagnosis (26%). Fewer respondents reported fear of treatment (18%).

Perception regarding the curability of breast cancer was notably low. The majority of respondents (77%) believed that breast cancer is not curable, even if detected early, while only a small proportion (23%) believed in its curability with early detection. Finally, willingness to seek medical help for breast-related changes was moderate. Slightly more than half of the respondents (52%) expressed willingness to seek help, while a considerable proportion (48%) was not willing to do so.

Table 3- Factors Influencing Breast Cancer Screening

Variable	Frequency	Percent (%)
Family History of Cancer		
Yes	53	38
No	88	62
Nature of Cancer History		
Breast Cancer	13	24
Cervical Cancer	3	6
Ovarian Cancer	12	23
Others	25	47
Regular Health Check-up		
Yes	34	24
No	107	76
Presence of Breast Abnormalities		
Yes	3	9
No	31	91
Concerns about Cancer		
Yes	82	58
No	59	42
Total	141	100
Awareness of Early Detection		
Yes	43	30
No	98	70
Breast Cancer Screening Awareness		
Yes	21	15
No	120	85
Breast Cancer Screening Methods Awareness		
BSE	7	33
Clinical Breast Examination	4	19
Mammography	9	43
All of them	1	5
Breast Cancer Screening undertaken by the Respondents		
BSE	6	35
Clinical Breast Examination	4	24
Mammography	7	41
Frequency of Visiting a Doctor for Routine Health Check-ups		
Regularly	14	10
Occasionally	39	28
Only When ill	88	62
Never	0	0

Doctor's Advice Regarding Breast Cancer Screening		
Yes	9	6
No	132	94
Compliance with Doctor's Recommendation for Breast Cancer Screening		
Yes	4	44
No	5	56
Factors Influencing Breast Cancer Screening		
Socio-demographic	34	21
Cultural	47	28
Challenges in Accessing Healthcare	45	27
Personal History	23	14
Psychological	17	10
Cultural Beliefs that Hamper Breast Cancer Screening		
Stigma and taboos/ discomfort discussing breast health	34	9
Lack of autonomy over one's own health decisions	56	15
Misconceptions and Myths About Breast Cancer	39	11
Low Priority of Women's Health	67	19
Discomfort of breast examination by male doctors	88	24
Lack of knowledge	79	22
Challenges in Accessing Healthcare		
Limited Screening Infrastructure & Uneven Facility Distribution	67	19
Lack of essential equipment in the government hospitals	65	19
Limited insurance coverage	48	14
Transportation challenges	56	16
Role of caregiver	24	7
Poor awareness of screening and services available	86	25
Psychological Factors influencing the respondents regarding breast cancer screening		
Fear of diagnosis	56	26
Fear of treatment	39	18
Social stigma of being a cancer patient	62	29
Fear of Criticism	59	27
Perception of Curability of Breast Cancer if Detected Early		
Yes	32	23
No	109	77
Willingness to Seek Medical Help for Breast-related Changes		
Yes	74	52
No	67	48

DISCUSSION

Socio-demographic Profile of the Respondents

The findings show that respondents from Kolkata tend to be more familiar with breast cancer compared to those from Howrah. This pattern reflects broader structural disparities in healthcare access and service availability across districts. Existing literature has already pointed out that urban centres like Kolkata, with better infrastructure and healthcare facilities, provide greater exposure to health information, while semi-urban districts lag behind in access and awareness (Majumder et al., 2023).

The majority of respondents fall within the middle adult age group. This is significant because breast cancer risk is known to increase with age, particularly after early adulthood. Research consistently shows that risk rises steadily across the life course, although certain aggressive forms may appear in younger women (Łukasiewicz et al., 2021; McGuire et al., 2015). This suggests that the study population is within a critical risk bracket.

Most respondents have completed at least secondary or higher education, with a substantial number being graduates. Evidence suggests that education directly influences awareness, attitudes, and participation in screening practices. Women with higher levels of education are more likely to understand symptoms, seek

information, and adopt preventive behaviours (Biswas & Chakraborty, 2020; Rakshani et al., 2022). At the same time, the presence of respondents with lower education levels highlights a persistent gap that continues to limit awareness and informed decision-making.

A large proportion of respondents are not formally employed, which may restrict their exposure to health information and institutional awareness programs. While employment can enhance access to information, it does not automatically translate into better health behaviour. Studies have shown that even working women, including those in healthcare settings, may not engage in regular screening due to lack of awareness or prioritisation (Patel et al., 2023). At the same time, spousal occupation appears to influence health behaviour, as households with more stable or formal employment tend to show relatively better engagement with healthcare services (Sabgul et al., 2021).

Income levels further shape awareness and access. The findings indicate that most respondents belong to lower-middle income groups. Literature consistently shows that higher income is associated with better awareness and increased uptake of screening services, as financial stability reduces barriers to accessing healthcare (Al-Hanawi et al., 2021). Limited income, often leads to delayed care-seeking and reduced preventive practices.

Most respondents marry in early to mid-adulthood and have been married for a considerable duration. Longer marital duration often increases exposure to family health discussions and decision-making processes. Some studies suggest that spousal influence and shared decision-making can enhance women's awareness and healthcare utilisation (Mabaso & Bengu, 2023; Sabgul et al., 2021).

The findings show that most respondents have children and have practiced breastfeeding. Existing evidence strongly supports breastfeeding as a protective factor against breast cancer, particularly when practiced for longer durations (Babita et al., 2024; Chen et al., 2023). At the same time, age at first childbirth is also linked to breast cancer risk, reinforcing the need for awareness around reproductive health factors (MacMahon et al., 2020).

Health insurance coverage plays a crucial role in shaping access to screening and treatment services. In the present study, less than half of the respondents have health insurance, and only a small proportion possess cancer-specific coverage. Limited insurance coverage acts as a significant barrier to accessing preventive services, as out-of-pocket expenditure for diagnostic tests such as mammography and follow-up care can be financially burdensome, especially for middle- and low-income households. This financial constraint often leads women to delay or completely avoid screening, even when they are aware of its importance. Patel et al. (2023) highlighted that insured-women, particularly those above 40 years of age, are more likely to undergo mammography compared to uninsured women.

Awareness (symptoms, risk factors, and causes) of breast cancer among married women

It is a positive finding that most respondents have heard of breast cancer, indicating basic exposure. However, the presence of a small group who remain unaware highlights persistent gaps in information dissemination and community outreach (Onuoha et al., 2025; Rudwan et al., 2025). Mere awareness does not ensure understanding, and limited familiarity continues to hinder early detection and timely care-seeking (World Health Organization, 2025; Sung et al., 2021).

A clear socio-economic gradient is evident, with lower awareness among women from low-income groups and better familiarity among those from higher-income backgrounds. This reflects structural inequalities in access to education, media, and healthcare (Marmot, 2015; Bray et al., 2024), with higher socio-economic status

linked to better screening uptake (Taheri et al., 2019).

Information sources are largely informal, dominated by family and social networks, followed by media and the internet. While widespread, these sources often provide incomplete or inaccurate knowledge, reinforcing misconceptions (Chen et al., 2018). The lack of trusted institutional sources highlights weak health communication systems, making health literacy crucial for informed decision-making (Nutbeam, 2008; World Health Organization, 2025; Glanz et al., 2015).

Symptom awareness is uneven. Visible signs like breast lumps are widely recognised, while less obvious symptoms remain poorly understood. This pattern aligns with existing evidence and may delay diagnosis (World Health Organization, 2025; Sung et al., 2021). Education improves symptom recognition, but gaps remain in understanding subtle signs, affecting early detection (Prusty et al., 2020; AlMutawah et al., 2025; Anderson et al., 2015).

Awareness of risk factors is also fragmented. Commonly identified factors include smoking, alcohol use, late menopause, and family history, while other important determinants receive less attention (Łukasiewicz et al., 2021; Sung et al., 2021; World Health Organization, 2025). Urban–semi-urban differences are visible, with higher awareness in Kolkata compared to Howrah, reflecting disparities in access to information and services (Chen et al., 2019; Bray et al., 2024).

Education strongly influences awareness, with higher knowledge among educated women, while age increases risk but does not guarantee awareness without continuous information access (Biswas & Chakraborty, 2020; Hani et al., 2025; DeSantis et al., 2019; World Health Organization, 2026).

Respondents identify multiple causes of breast cancer, with genetic factors most recognised. While scientifically valid, this overemphasis may reduce perceived risk among those without family history, despite most cases being linked to modifiable and environmental factors (AACR, 2025; Colditz & Bohlke, 2014). Awareness of hormonal, reproductive, and lifestyle factors remains low, despite their significant role (Anderson et al., 2015; Prusty et al., 2020; World Cancer Research Fund, 2020; Bray et al., 2024). Misconceptions, such as linking breast injury to cancer, further reflect gaps in accurate knowledge (Glanz et al., 2015).

Factors influencing Breast Cancer Screening

Women with affected first-degree relatives have a significantly higher risk (Brewer et al., 2017; Cancer Research UK, 2023). A few respondents also report a family history of ovarian and other cancers, which have been associated with increased breast cancer risk (Bethea et al., 2016).

Preventive health behaviour remains limited, as only a few respondents engage in regular health check-ups. This reduces opportunities for early detection and aligns with evidence showing that lack of routine healthcare engagement lowers screening uptake (Gupta et al., 2015). Awareness of early detection and screening is also poor, reflecting a persistent knowledge gap influenced by socio-economic inequalities (Subramanian et al., 2024). Knowledge of screening methods such as breast self-examination, clinical examination, and mammography is minimal, with very few respondents having comprehensive understanding. Respondents from Kolkata show relatively better awareness and practice than those from Howrah, reflecting urban advantages in healthcare access (Moeti et al., 2023).

Even among those aware, screening practice remains low, indicating a gap between knowledge and action. Healthcare-seeking behaviour is largely symptom-driven, with many respondents visiting doctors only when ill. Factors such as spousal influence, occupation, and financial capacity shape these practices (Ghanbari et al., 2020; Kamila et al., 2025; Patil et al., 2023). Doctor's advice, which can strongly influence screening, is limited, and

compliance remains low even when advice is given (Scheel et al., 2016).

Cultural and social barriers play a major role. Discomfort with male doctors, stigma, myths, and hesitation to discuss breast health discourage screening (Bolton & Lawn, 2026; Singh et al., 2025; U.S. Department of Veterans Affairs, 2021). Limited autonomy in decision-making further restricts women's access to care (Penn State University, 2025).

Access-related challenges such as inadequate infrastructure, uneven service distribution, transportation issues, and limited insurance coverage continue to hinder screening (Bain et al., 2018; NAMS Task Force Report, 2024). Caregiving responsibilities also reduce women's ability to prioritise their own health (Kim et al., 2020).

Psychological barriers, including fear of diagnosis, treatment, stigma, and social criticism, strongly influence behaviour and often delay screening (Burugu& Salvatore, 2024; Odanye et al., 2021). In addition, many respondents do not believe that breast cancer is curable if detected early, reflecting a major knowledge gap and contributing to low screening uptake (Online Bureau, 2025). This contrasts with evidence from developed settings where early detection significantly improves survival (Worldwide Cancer Research, 2025).

Suggestions

There is a need to enhance community-level awareness through continuous and structured health education programs. Awareness initiatives should focus on comprehensive knowledge of symptoms, risk factors, and early detection methods. In areas of Kolkata and Howrah, targeted outreach through local communities, slums, and ward-level platforms can improve reach. Use of mass media, digital platforms, and local language communication should be strengthened, along with integration of breast health education into maternal and reproductive health services.

Emphasis should be placed on promoting Breast Self-Examination (BSE) as a simple and cost-effective method. Regular screening camps and community-based health check-up programs should be organised, especially in underserved areas. These can be aligned with outreach activities under the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS), which supports early detection of cancer. Expansion of Mobile Medical Units can further improve access to screening services.

Public healthcare facilities need strengthening in terms of infrastructure, trained personnel, and reduced waiting time. Government schemes such as Swasthya Sathi and Ayushman Bharat should be more effectively implemented and widely promoted among women, especially in low-income groups. Screening services should be made affordable or free, with decentralised delivery at community and ward levels.

Community interventions should focus on normalising conversations around women's health. Involving husbands and family members can improve support for women's health decisions. Ensuring availability of female healthcare providers can reduce hesitation and increase participation in screening.

Fear of diagnosis, treatment, and social stigma discourages women from seeking screening. Awareness programs should address these fears by emphasising early detection and positive treatment outcomes. Behaviour change communication strategies are essential to shift attitudes from fear-based avoidance to preventive healthcare practices.

Non-governmental organisations can play a crucial role in bridging gaps between communities and healthcare systems. In Kolkata and Howrah, NGOs working in marginalised communities can organise awareness drives, screening camps, and follow-up services. Community-based groups such as self-help groups can be used for peer education and mobilisation.

There is a need for systematic monitoring and follow-up of women identified as at risk. Strengthening all healthcare mechanisms at the district levels can improve screening, early diagnosis, and referral services. NCD

(Non-Communicable Diseases) clinics and outreach camps should be utilised more effectively for breast cancer screening.

CONCLUSION

The present study concludes that although awareness of breast cancer exists among married women in the Kolkata and Howrah district of West Bengal, it remains incomplete and does not translate into adequate breast cancer screening practices. A large proportion of married women are still unaware or do not translate awareness into preventive action. These gaps are shaped by socio-demographic factors, limited access to healthcare services, cultural beliefs, and psychological barriers. Therefore, there is a strong need for targeted, community-based interventions that go beyond general awareness and focus on behaviour change. Strengthening grassroots-level health education, improving accessibility and affordability of screening services, and involving frontline health workers, NGOs, and government programmes can play a crucial role. These measures can significantly improve early detection rates and contribute to better health outcomes for women in these regions.

Avenues for further research

The study was limited to Kolkata and the Howrah district with a small sample size; future research should cover wider regions and larger samples to better understand awareness and screening behaviour. Further studies are also needed to assess the effectiveness of health programs and socio-cultural factors influencing breast cancer screening.

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List of Abbreviations:

BSE- Breast Self-Examination, CBE- Clinical Breast Examination

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