

ASSESSMENT OF BREAST CANCER AWARENESS AMONG NON-MEDICAL STUDENTS In Peshawar

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ABSTRACT

Introduction: Breast cancer is the second leading cause of death for women globally, affecting millions and presenting a substantial health challenge. Early detection is crucial to reducing mortality, yet limited awareness of symptoms and risk factors often leads to delayed diagnosis. This challenge is especially pronounced in developing countries, where restricted access to healthcare and information results in more advanced-stage diagnoses and poorer patient outcomes.

Objective of our study is to assess the level of knowledge, attitudes, and awareness about breast cancer among non-medical students, identify gaps in understanding about early detection methods, symptoms, risk factors, and preventive measures, and inform future educational interventions.

Methodology: A descriptive cross-sectional study was carried out in Peshawar with 369 participants using convenience sampling and a structured questionnaire to assess breast cancer knowledge and awareness. SPSS version 26 was used for data analysis, with findings presented in tables and charts for clarity.

Result: This study of 369 non-medical students revealed substantial breast cancer awareness, with 89.4% having heard of it and 77.8% acknowledging its prevalence in Pakistan. While 60.7% recognized hereditary risk factors, only 37.4% were aware of breast self-examination (BSE), and only 20.6% performed it. Although only 29.3% were aware of lump palpation, 85.9% expressed an interest in learning more about breast cancer prevention. Screening preferences revealed 62.9% favoring ultrasonography, underlining the need for increased breast health education.

Conclusion: School children show minimal risk factor awareness, low BSE involvement and preferred ultrasound over mammography. College students had moderate, higher BSE practice and familiarity with ultrasonography. University students were the most knowledgeable about BSE, risk factors and clinical screening tools.

Keywords: Breast Cancer, Breast Cancer Gene 1 and Breast Cancer Gene 2.

INTRODUCTION

Breast cancer is a complex and prevalent health concern, affecting millions of people worldwide (1). Detection is the cornerstone for lowering mortality. Women's lack of understanding about

breast cancer contributes to its late detection (2). Breast carcinoma is a main reason for disease and mortality worldwide, with a significant impact on

people's lives, especially in developing countries (3).

Statistics of cancer incidence and death have risen dramatically during the last decade over the world. According to estimates, there were 9.6 million cancer-related deaths and more than 18.1 million new cases globally in 2018. According to GLOBOCAN 2018 data, there are 2.08 million incidences of breast cancer worldwide, with 6.3 lakh deaths from the disease. With these figures, breast cancer accounts for 24.2% of all cancers diagnosed in women, making it the most common cancer diagnosed in women globally (4).

Based on Pakistan WHO cancer profile, around 35,000 new cases of female breast cancer are diagnosed each year, more than any other type of cancer, and breast tumor is responsible for 30.8% of cancer deaths among women in Pakistan (5).

Pakistan has the highest incidence of breast cancer among Asian countries. Unfortunately, the Pakistani public usually lacks knowledge about this ailment, leading to delayed diagnoses and poor treatment outcomes. This lack of information is especially obvious in Southern Punjab, where literacy rates are lower than in the north, therefore informing non-medical students is important (3).

Breast tumors are lumps or masses caused by abnormal cells that proliferate uncontrollably. This is how breast cancer starts in the breast. Although it can occur anywhere in the breast, the most common sites are the glandular tissue known as the lobules (lobular carcinoma) or the milk-producing ducts (ductal carcinoma). If breast cancer is not discovered early, it can metastasize to other regions of the body, such as the brain, liver, lungs, lymph nodes, and bones. A few of the variable that could lead to breast cancer development include genetic mutations (such as BRCA1 and BRCA2), age, family history, hormonal influences, and lifestyle choices such as food and exercise (6). Although mammography is a popular and easily accessible tool to screen for breast cancer, it frequently requires additional imaging tests and may not always provide a correct diagnosis on its own. Ultrasound can be a good first option because it is quicker, safer, and can be used in any situation (7).

Breast cancer remains a significant health concern globally, and awareness of its risk factors, symptoms, and prevention strategies is essential, especially for young people, as the disease continues to be a major global health concern. Numerous studies have evaluated university students' knowledge of breast cancer, with an emphasis on non-medical students from various cultural and geographic backgrounds. These students, primarily between 19 and 25, are an important group for early breast health education (2).

Objectives

To assess the level of breast cancer awareness among different educational levels.

Materials and Methods

Study design

Descriptive Cross Sectional

Study settings

The investigation was carried out at Frontier Model School (girls), Qurtuba School and College (girls), Peshawar Model Degree College, Frontier Model College (girls), Qurtuba University of Science and Information Technology, Abasyn University.

Study duration

The duration of months 4-6 (from June to December) was required for this cross-sectional study.

Sample size

Sample size was calculated by Raosoft calculator, Error: 5%

Confidence level: 95%

Relative rate: 57.5%

(<https://koreascience.or.kr/article/JAKO201510534323736.page>)

Sample size: 369.

Sampling Technique

Non-probability Convenience sampling technique.

Inclusion criteria

- Non-medical female students only.

- Level of education: SSC, HSSC and undergraduate students.

Exclusion Criteria

- Those students who are not willing to participate.
- Students who are under treatment for breast cancer (chemotherapy).

Data collection and Analysis procedure

Data was gathered from different schools, colleges, and universities in Peshawar using a validated questionnaire with prior authorization from the respective institutions, after approval by the Graduate Student Committee (GSC) of Rehman Medical Institute (RMI). We also provided information about breast cancer to college and school pupils in case they were unable to comprehend the questionnaire. Using SPSS,

version 27 (SPSS Inc., Chicago, IL, USA), the data was analyzed using cross-tabulations to examine correlations between variables and descriptive statistics such the mean and standard deviation. Tables and charts were used to visually represent the data in a straightforward and efficient manner.

RESULTS

The study aimed to examine breast cancer awareness among non-medical students in Peshawar, Pakistan. The study analyzed 369 students from various age groups.

Age Distribution:

369 non-medical students from schools, colleges, and universities in Peshawar participated. Of these, 123 students were under 18 from schools, 123 students aged 19-20 from colleges, and 123 students aged 21-26 from universities.

Table: 1 Age of students

		Age			Total
		school	collage	university	
Age of Student	Lower 18	123	0	0	123
	19 to 20	0	123	0	123
	21 to 26	0	0	123	123
Total		123	123	123	369

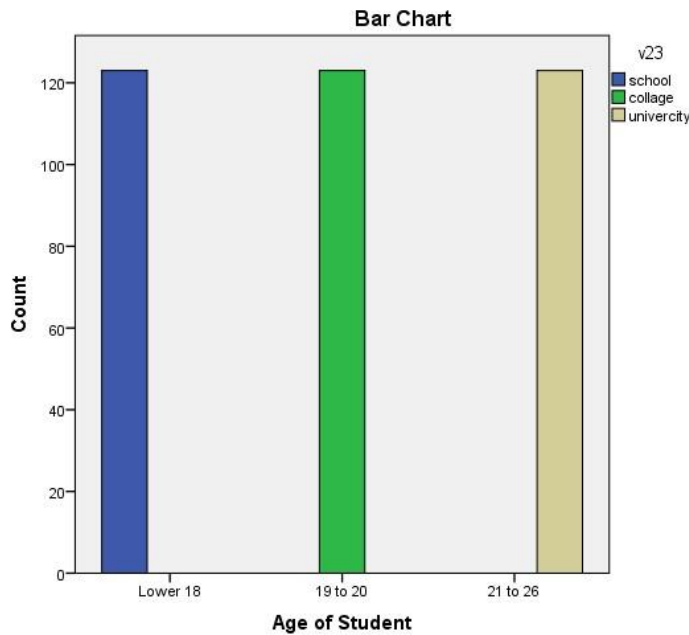


Fig: 1 Age of students

Family history:

The table shows that 232 out of 369 students believe a positive family history of breast cancer increases the risk, with 77 from schools, 74 from colleges, and 81 from universities. 76 students

disagreed (22 from schools, 24 from colleges, 30 from universities), while 61 students were unsure (24 from schools, 25 from colleges, 12 from universities).

Table: 2 Family history

					Total
		school	collage	university	
Positive family history breast cancer increases the risk	Yes	77	74	81	232
	No		24		76
	Not sure	22	25	30	61
Total		123	123	123	369

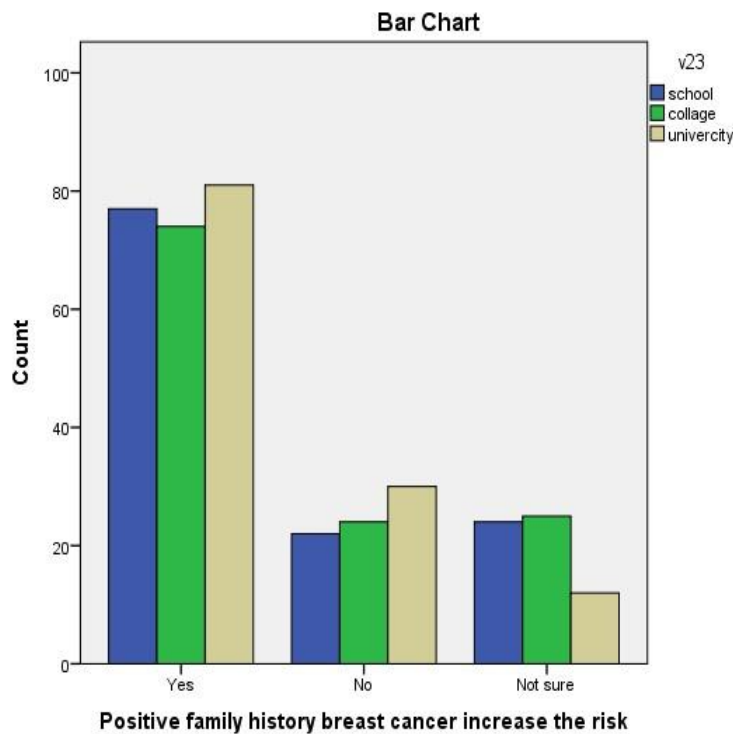


Fig: 2 Family history

Inherited Gene Defect:

The table shows that 224 out of 369 students believe inherited gene defects can cause breast cancer, with 70 from schools, 76 from colleges, and 78 from universities. 86 students disagreed

(43 from schools, 18 from colleges, 25 from universities), while 59 students were unsure (10 from schools, 29 from colleges, 20 from universities).

Table: 3 Inherited gene defects

					Total
		school	collage	university	
Do you think inherited gene Can defects cause breast cancer?	Yes	70	76	78	224
	No		18		86
	Not sure	43	29	25	59
Total		123	123	123	369

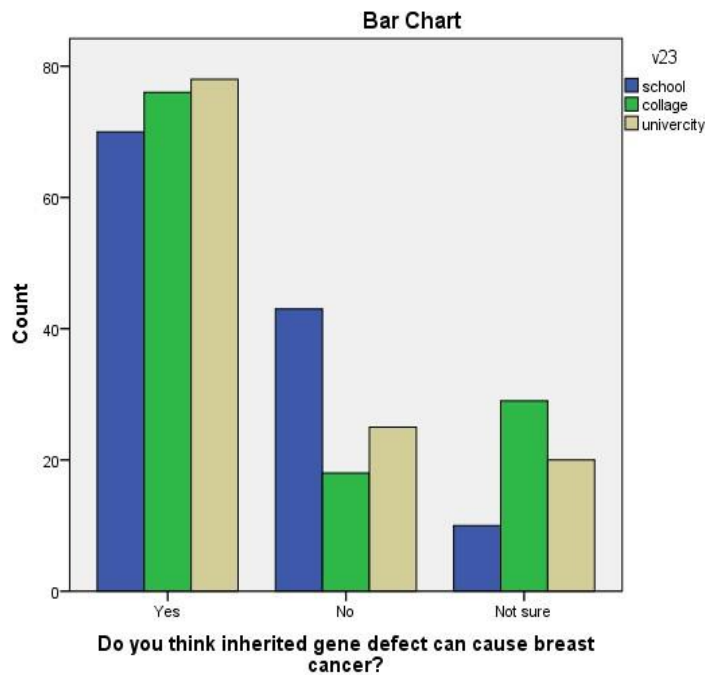


Fig: 3 Inherited gene defects

Abnormal Discharge:

The table shows that 166 out of 369 students believe abnormal nipple discharge could be a sign of breast cancer, with 41 from schools, 52 from colleges, and 73 from universities. 105

students disagreed (49 from schools, 29 from colleges, 27 from universities), and 98 students were unsure (33 from schools, 42 from colleges, 23 from universities).

Table: 4 Abnormal discharges

				Total
	school	collage	university	
Could abnormal discharge Yes from your nipple be a sign of breast cancer?	41	52	73	166
No		29		105
Not sure	49	42	27	98
	33		23	
Total	123	123	123	369

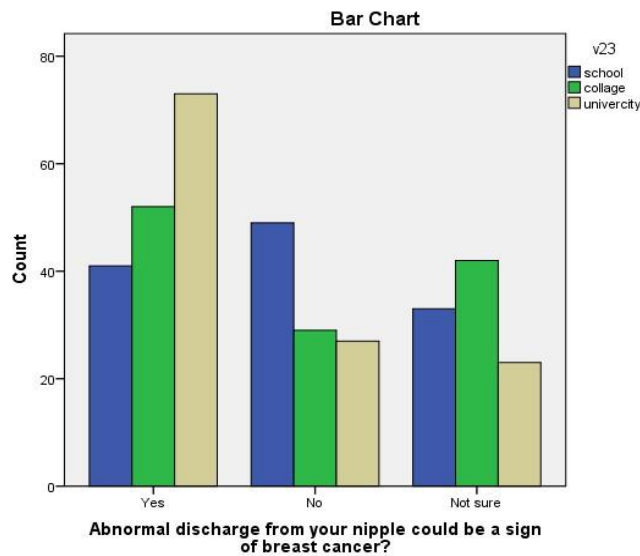


Fig: 4 Abnormal discharges

Awareness of BSE:

The table shows that 138 out of 369 students were aware of breast self-examination (BSE), with 44 from schools, 48 from colleges, and 46 from universities.

199 students were not aware (71 from schools, 67 from colleges, 61 from universities), and 32 students were unsure (8 from schools, 8 from colleges, 16 from universities).

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Table: 5 Awareness of BSE

				Total
	school	collage	university	
Are you aware of breast self- Yes examination (BSE)?	44	48	46	138
No	71	67	61	199
Not sure	8	8	16	32
Total	123	123	123	369

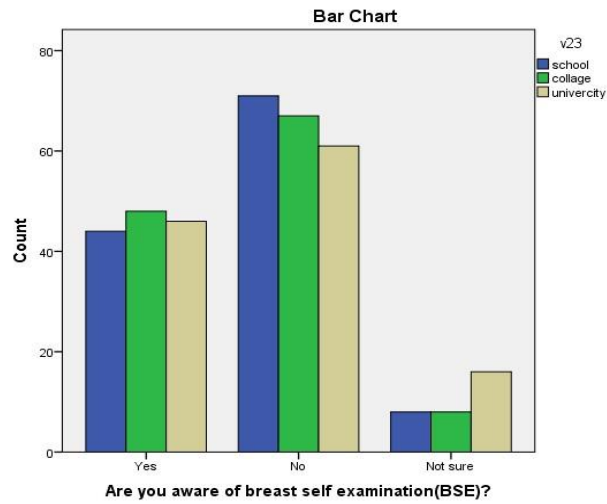


Fig: 5 Awareness of BSE

Practice of BSE:

The table shows that among 369 non-medical students, 76 practiced BSE, 258 did not, and 35

were unsure. The distribution includes 17, 32, and 27 students practicing BSE from schools, colleges, and universities, respectively.

Table: 6 Practice of BSE

		school	collage	university	Total
Do you practice breast self-examination (BSE)?	Yes	17	32	27	76
	No	94	85	79	258
	Not sure	12	6	17	35
Total		123	123	123	369

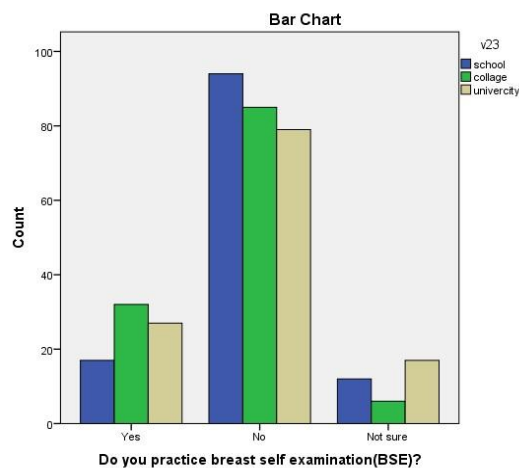


Fig: 6 Practice of breast self-examination

Breast Cancer Patients Can Breast Feed:

The table shows 66 out of 369 students believe breast cancer patients can breastfeed, with 10 from schools, 16 from colleges, and 40 from universities.

223 students disagreed (95 from schools, 74 from colleges, 54 from universities), and 80 students were unsure (18 from schools, 33 from colleges, 29 from universities).

Table: 7 Breast cancer patients can feed breasts

					Total
		school	collage	university	
Are breast cancer patients allowed to breast feed?	Yes		16		66
	No	10 95	74	40 54	223
	Not sure	18	33	29	80
Total		123	123	123	369

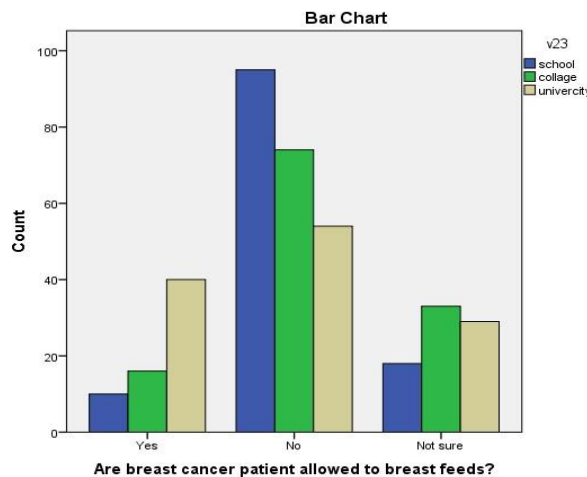


Fig: 7 Are breast cancer patients allowed to breast feed

Knowledge and Prevention:

The table shows that 317 out of 369 students were interested in learning about breast cancer prevention (90 from schools, 115 from colleges,

112 from universities). 45 students were not interested (33 from schools, 4 from colleges, 8 from universities), and 7 were unsure (0 from schools, 4 from colleges, 3 from universities).

Table: 8 Knowledge and prevention

					Total
		school	collage	university	
Would you like to learn more about breast cancer and its prevention?	Yes	90	115	112	317
	No	33	4	8	45
	Not sure	0	4	3	7
Total		123	123	123	369

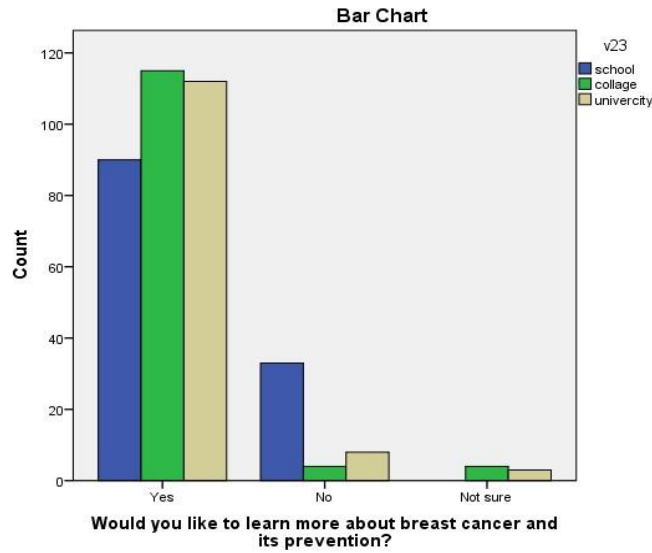


Fig: 8 Knowledge and Prevention

First Choice Ultrasound:

The table shows that 83 school students, 80 college students, and 69 university students would choose ultrasound for screening. 19 school students, 20

college students, and 36 university students would not, while 21 school students, 23 college students, and 18 university students were unsure.

Table: 9 First choice ultrasound

		school	collage	university	Total
Is ultrasound your first choice for screening if you feel any lumps in your breast?	Yes	83	80	69	232
	No	19	20	36	75
	Not sure	21	23	18	62
Total		123	123	123	369

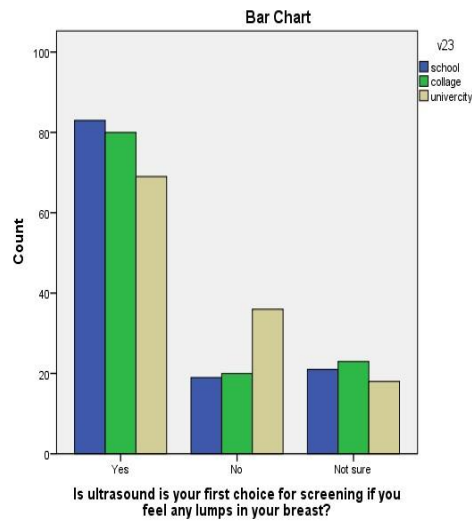


Fig: 9 First choice ultrasound

First Choice Mammography:

The table shows that 175 students would choose mammography for screening (70 from schools, 46 from colleges, 59 from universities). 58 students

would not choose mammography (28 from schools, 24 from colleges, 6 from universities). 136 students were unsure (25 from schools, 53 from colleges, 58 from universities).

Table: 10 First choice mammography

					Total
		School	collage	university	
Is mammography your first choice for screening if you feel any lumps in your breast?	Yes	70	46	59	175
	No	28	24	6	58
	Not sure	25	53	58	136
Total			123		369

The chi-square test reveals a statistically significant association between the variables, with the strong linear relationship indicated by linear-by-linear test ($p=0.000$). The Pearson chi-square ($p=0.006$) and

likelihood ratio ($p=0.003$) also confirm the significant. However, the presence of small, expected counts in some cells (3.33%) may affect the reliability of the results.

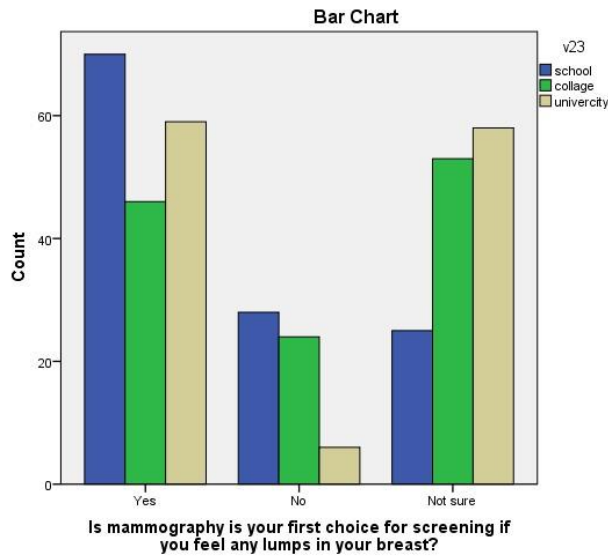


Fig: 10 first choice mammography

Knowledge of breast cancer:

A significant majority of participants, 89.4% (or 330 students), reported having heard of breast cancer, indicating a strong general awareness

among non-medical students. In contrast, only 7.9% (29 students) responded "No," and a small portion, 2.7% (10 students), were uncertain.

Table: 11 Knowledge of breast cancer

	Frequency	Percent
Yes	330	89.4
NO	29	7.9
Not sure	10	2.7
Total	369	100.0

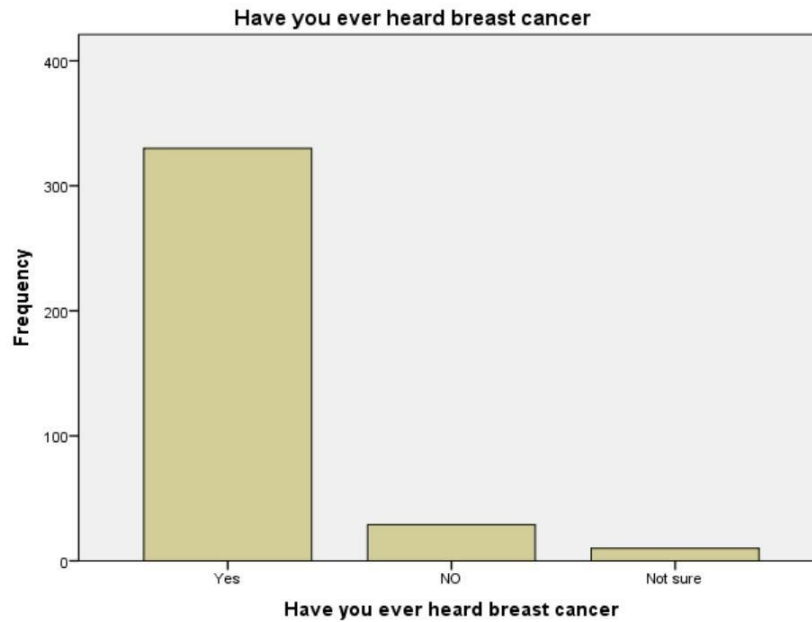


Fig: 11 Knowledge of breast cancer

Breast cancer awareness in Pakistan:

A significant 77.8% of respondents perceive breast cancer as common in Pakistan, indicating

strong awareness of its prevalence. In contrast, 8.7% do not believe it is common, while 13.6% remain uncertain.

Table: 12 Breast cancer awareness in Pakistan

	Frequency	Percent
Yes	287	77.8
No	32	8.7
Not sure	50	13.6
Total	369	100.0

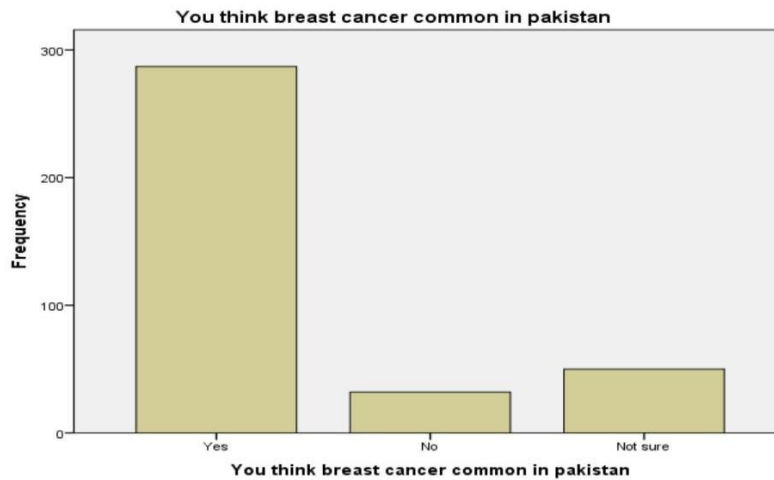


Fig: 12 breast cancer awareness in Pakistan

Breast Cancer with Advance Age:

In a survey of 369 participants, 53.1% agreed that breast cancer risk increases with age, while 23.8%

disagreed, and 23.0% were unsure. The results suggest that although most see age as a risk factor, there is notable uncertainty and disagreement.

Table: 13 Breast cancer with advanced age

	Frequency	Percent
Yes	196	53.1
No	88	23.8
Not sure	85	23.0
Total	369	100.0

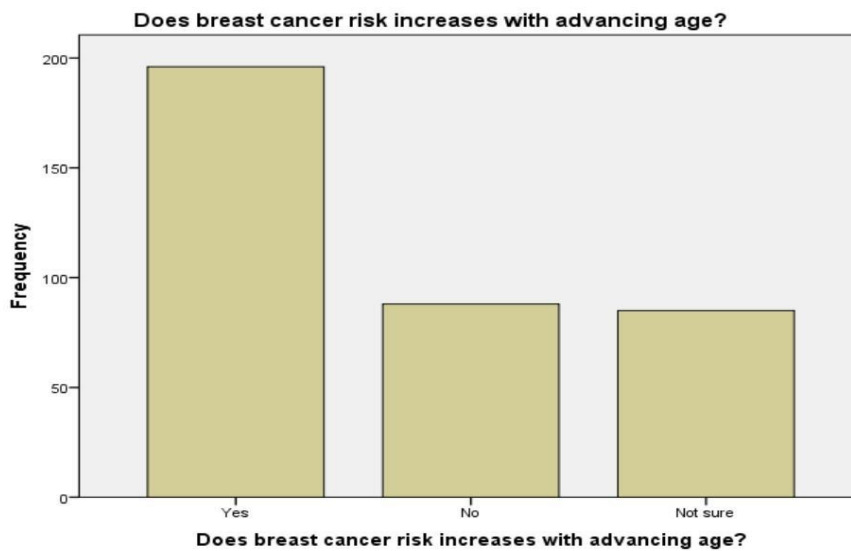


Fig: 13 breast cancer with advanced age

Breast Feed Effect on Breast Cancer:

In a survey of 369 respondents, 54.2% answered "Yes," indicating agreement, while 23.0%

responded "No," and 22.8% were "Not sure." The majority agreed, though half showed uncertainty or disagreement.

Table: 14 Breast feed effect on breast cancer

	Frequency	Percent
Yes	200	54.2
No	85	23.0
Not sure	84	22.8
Total	369	100.0

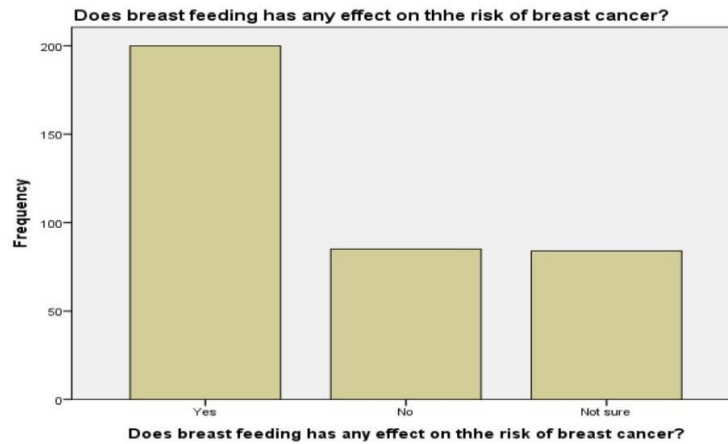


Fig: 14 breast feed effect on breast cancer

Skin Colour:

In response to the question about whether changes in breast skin color could indicate breast cancer, 50.9% of the 369 participants answered

"Yes," suggesting a recognition of this potential warning sign. Meanwhile, 20.6% responded "No," and 28.5% were "Not sure."

Table: 15 Skin color

	Frequency	Percent
Yes	188	50.9
No	76	20.6
Not sure	105	28.5
Total	369	100.0

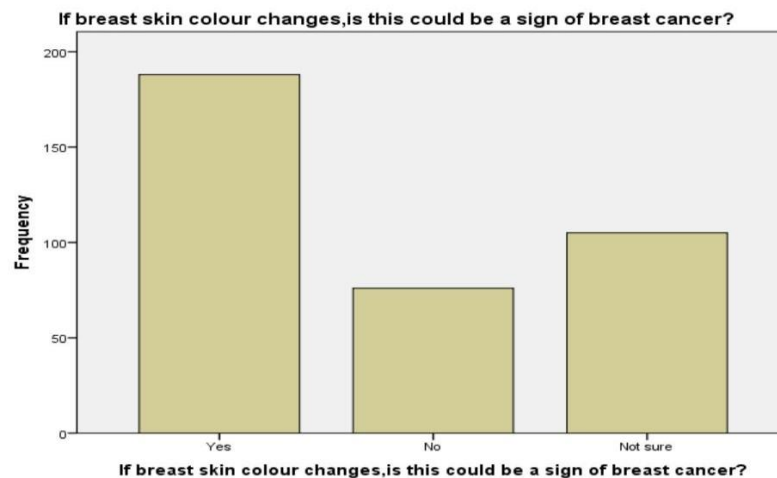


Fig: 14 skin colors

Pain in Breast:

A significant 59.3% of the 369 participants acknowledged that pain in one breast could be a

sign of breast cancer, reflecting heightened awareness of this critical symptom. In contrast, 25.2% disagreed, and 15.4% were uncertain.

Table: 16 Pain in breast

	Frequency	Percent
Yes	219	59.3
No	93	25.2
Not sure	57	15.4
Total	369	100.0

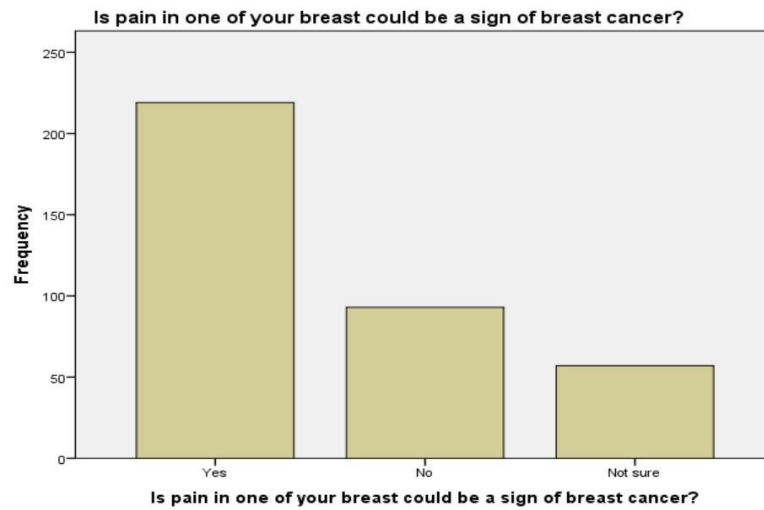


Fig: 16 Pain in breast

Lumps in Breast:

A notable 56.1% of the 369 participants recognized that the formation of a lump is a sign of breast cancer, indicating strong awareness of

this critical symptom. Meanwhile, 23.3% disagreed, and 20.3% were uncertain, revealing a degree of ambiguity among some respondents.

Table: 17 Lumps in breast

	Frequency	Percent
Yes	207	56.1
No	86	23.3
Not sure	75	20.3
11.00	1	3
Total	369	100.0

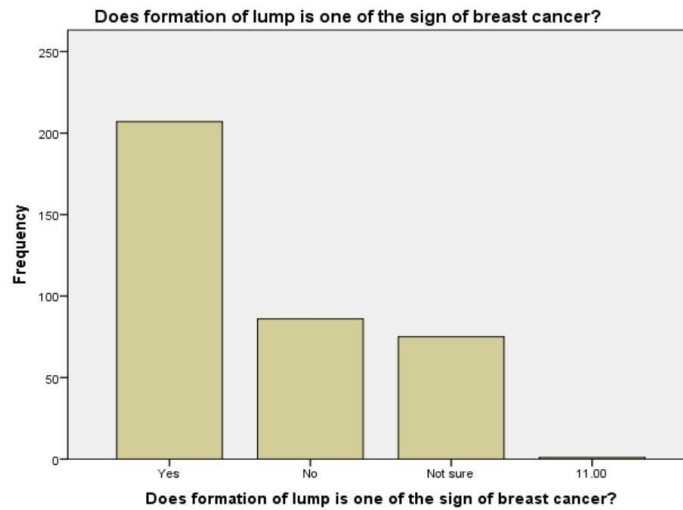


Fig: 17 Lumps in breast

Palpation of Lumps:

A mere 29.3% of respondents indicated they know how to palpate for lumps or swelling in the breast, highlighting a concerning lack of familiarity with

this essential self-examination technique. In contrast, 49.9% stated they do not know how to perform palpation, while 20.9% were unsure.

Table: 18 Palpation of lumps

	Frequency	Percent
Yes	108	29.3
No	184	49.9
Not sure	77	20.9
Total	369	100.0

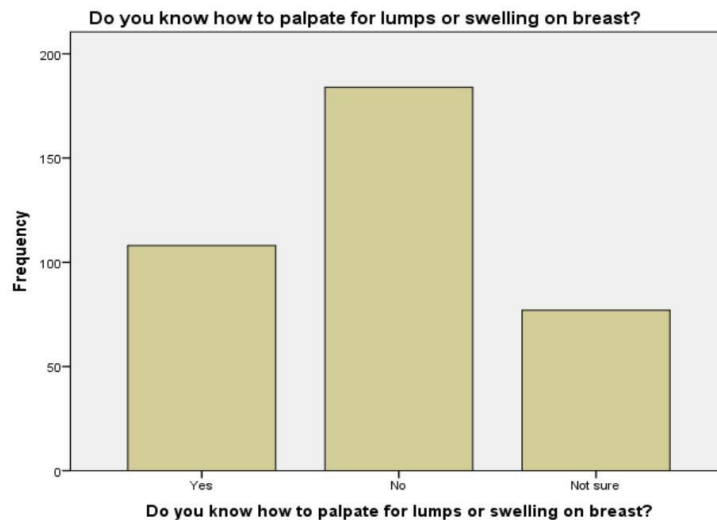


Fig: 18 Palpation of lumps

Breast Cancer Curable:

A substantial 66.9% of respondents believe that breast cancer is curable, reflecting a keen sense of hope and understanding regarding treatment

outcomes. In contrast, 13.8% disagreed, indicating that they do not believe in its curability, while 19.2% were uncertain.

Table: 19 Breast cancer curable

	Frequency	Percent
Yes	247	66.9
No	51	13.8
Not sure	71	19.2
Total	369	100.0

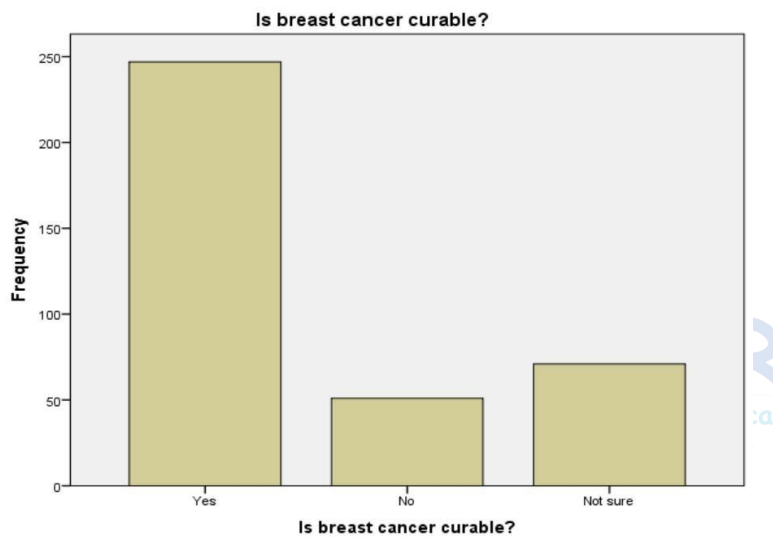


Fig: 19 Breast cancer curable

Breast cancer patients should be isolated:

Only 18.7% of respondents believe that breast cancer patients should be isolated, indicating a

minority view on the treatment approach for these individuals. In contrast, a significant 58.5% disagreed, while 22.8% were unsure.

Table: 20 Breast cancer patients should be isolated

	Frequency	Percent
Yes	69	18.7
No	216	58.5
Not sure	84	22.8
Total	369	100.0

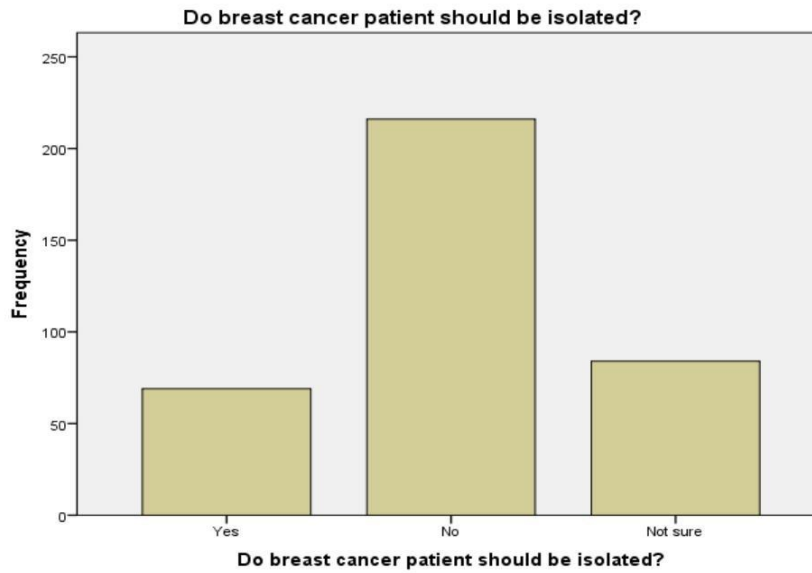


Fig: 20 Breast cancer patients should be isolated

Public Awareness Programs:

An impressive 90.2% of respondents believe that there should be more initiatives to raise public

awareness of breast cancer. In contrast, only 7.0% disagreed, and 2.7% were "Not sure."

Table: 21 Public awareness program

	Frequency	Percent
Yes	333	90.2
No	26	7.0
Not sure	10	2.7
Total	369	100.0

Do you believe that there should be more initiatives to raise public awareness of breast cancer?

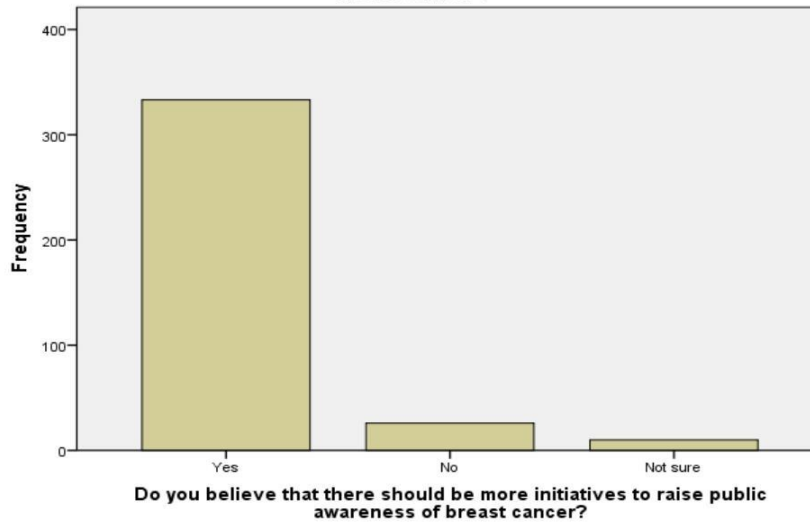


Fig: 21 Public awareness programs

Lumps or Lesions on ultrasound Indicate Breast Cancer:

A notable 52.0% of respondents recognize that lumps or lesions observed on ultrasound can be indicators of breast cancer, reflecting a substantial

understanding of diagnostic imaging. Conversely, 13.8% disagreed, indicating they do not believe these findings are significant, while 34.1% were "Not sure."

Table: 22 Lumps or lesion on ultrasound indicate breast cancer

	Frequency	Percent
Yes	192	52.0
No	51	13.8
Not sure	126	34.1
Total	369	100.0

Are lumps or lesion on ultrasound is indicator of breast cancer?



Fig: 22 Lumps or lesions on ultrasound indicate breast cancer

DISCUSSION

Breast cancer is still a complicated and widespread health issue that affects millions of people worldwide, lowering mortality rates still depends on early identification. The late discovery of breast cancer is caused by women's ignorance about the disease. One of the leading causes of illness and death globally, breast cancer significantly affects people's lives, especially in underdeveloped countries. Over the past ten years, the incidence and mortality rates of cancer have sharply increased worldwide.

The beginning of our discussion is the general frequency among these institutions. Here, students under 18 were from schools, those between 19 and 20 were from colleges, and those between 21 and 26 were undergraduates (universities). We also talk about the overall rate of knowledge, its danger, breast cancer as people age, the consequences of breastfeeding, abnormal discharge, nipple color, etc. We were shocked to discover how little and inadequate people knew about breast cancer awareness.

According to our study, the age distribution of the students is balanced, with 33.3% of the 369 total students falling into each of the following categories: under 18, 19 to 20, and 21 to 26. To improve engagement and learning experiences, educational programs must cater to the specific demands of each age group, as this diversity suggests a range of perspectives inside the learning environment. Abrar A R Ahmed et al.'s 2019 study included 240 students with a mean age of 22.8 ± 3.4 years and a range of 19 to 30 years (40).

According to our research, respondents' knowledge of breast cancer shows a high degree of familiarity with the subject. 330 people, or 89.4%, said they had heard about breast cancer, demonstrating the success of awareness campaigns. On the other hand, 2.7% (10 people) were uncertain and 7.9% (29 people) said they had never heard of it. According to a 2016 study by E. Yousif et al., Majmaah University students' awareness of breast cancer was high. It was found that 111 students (34.2%) knew a lot, 137 students (42.2%) knew a little, and 77 students (23.6%) knew very little (26).

According to our study, only 37.4% of respondents know that breast self-examination (BSE) is a practice. On the other hand, 8.7% are uncertain and 53.9% are unaware. In 2012, M. Nyanungo et al. conducted a follow-up study which revealed that 72.4% of non-medical students were familiar with breast self-examination (BSE) (49).

According to our current study, 45.0% of participants (166) identified abnormal nipple discharge as an indicator of breast cancer, compared to 28.5% (105) who disagreed and 26.6% (98) who were not sure. According to a 2019 study by S. Azizur et al., 65.6% of students are aware of fluid or bloody nipple discharge (50). According to the data gathered for our current study, 62.9% of participants (232) agreed that having a positive family history of breast cancer increases risk, whereas 20.6% of participants (76) disagreed and 16.5% of participants (61) were not sure. The findings found that 29.8% (231 persons) had a history of breast cancer in first-degree relatives, and 76.2% of these people were aware of the related risks, as compared to another study conducted by I. Hussain et al. in 2022. Family history had a significant impact on understanding of breast cancer risk factors, as indicated by the fact that 57.6% (446 persons) of those without a family history knew about the risks (51).

In our study, 53.1% of 196 respondents agreed that becoming older raises the risk of breast cancer. Conversely, 23.0% (85 people) were undecided, and 23.8% (88 people) thought it was not. Comparing this variable to another article, we noticed that 56.5% of participants in Imran M. et al.'s 2016 study recognized older age as a risk factor (52).

In our current data, 54.2% (200 individuals) indicated that Breastfeeding has an impact on breast cancer risk. In contrast, 22.8% (84 people) were doubtful and 23.0% (85 people) thought it did not. According to an earlier study by R. Pillai et al., out of 342 respondents, 33.0% (113 people) thought breastfeeding affected the risk of breast cancer. However, 29.5% (101 people) were unsure, and 37.4% (128 people) said "no,"

meaning they do not believe breastfeeding affects risk (2).

According to our survey, 247 people, or 66.9%, thought that breast cancer can be cured. On the other hand, 19.2% (71 people) were uncertain, and 13.8% (51 people) believed it was incurable. According to a related study by R. Pillai et al., out of 342 respondents, 64% (219 people) thought breast cancer was treatable, while 17% (58 people) disagreed. Furthermore, 19% (65 people) have doubts regarding its curability. Of these, the vast majority, 216 patients (58.5%), disagreed with the idea that breast cancer patients should be segregated, while 69 patients (18.7%) agreed (2). Furthermore, 84 patients (22.8%) said they were not sure if isolation was necessary. In a study about breastfeeding rights, 66 patients (17.9%) said that breastfeeding should be permitted for patients with breast cancer, whereas the majority of 223 patients (60.4%) disagreed. Also, 80 patients (21.7%) had questions concerning the problem. Regarding the isolation of patients with breast cancer, 10.8% of the 342 respondents in the previously mentioned article by R. Pillai et al. supported it (37 patients), while 72.2% (247 patients) opposed it (2).

When asked if changes in the color of breast skin could be an indication of breast cancer, 188 (50.9%) responded "Yes," 76 (20.6%) said "No," and 105 (28.5%) said "Not sure". According to a 2018 study by R. Pillai et al 58.5% of respondents to a survey of 200 people said they had noticed changes to their skin. Of them, 76 people (22.2%) reported a different change in skin tone, while 66 people (19.3%) reported a particular kind of change (2).

Furthermore, 58 patients, or 17%, were unclear about the problem. In general, a sizable majority of respondents disagree that patients with breast cancer should be segregated. In addition, when asked if they should be permitted to breastfeed, 133 patients (38.9%) agreed with the practice, while 73 patients (21.3%) disagreed. Furthermore, 136 patients, or 39.8%, expressed uncertainty. Another by R. Pilli in 2018 indicates that a sizable percentage of respondents (37.4%) think breastfeeding has no influence on the risk of breast cancer, whereas 33% think it does. A sizable

portion (29.5%) are unclear about the connection between breast cancer risk and breastfeeding (2).

Additionally, the data from our study on the development of a lump as an indication of breast cancer indicates that 56.1% (207 people) identified it as an indicator. Conversely, 20.3% (75 people) were uncertain and 23.3% (86 people) thought it was not a sign. According to a 2022 study by K. Abdelwahab et al., 31% of respondents said that a lump was the most frequently reported sign of breast cancer, followed by discomfort and changes in size and color among the remainder of the group members (24).

Of those who responded to our latest survey regarding breast lump palpation, 108 (29.3%) replied "Yes," 184 (49.9%) said "No," and 77 (20.9%) stated "Not sure." This crucial self-examination method is unknown to over half of the participants, and many are unsure as well. R. Pillai et al. study When asked if they were familiar with the process of palpating for breast lumps, 151 (44.1%) of the 342 respondents stated "Yes," 58 (17%) said "No," and 133 (38.9%) said "Never heard about it" (2).

A unique aspect of this research is its focus on assessing non-medical students' preferences between ultrasound and mammography as first-choice screening methods for breast lumps. By directly examining their choices, this study provides valuable insights into the students' awareness, familiarity, and confidence levels regarding these diagnostic tools, highlighting trends in their understanding of breast health screening options. In our findings, a substantial 62.9% of respondents preferred ultrasound as their first choice for screening, while 20.3% indicated they would not choose it, and 16.8% were unsure. Conversely, 47.4% identified mammography as their preferred screening tool, while 15.7% would not choose it, and 36.9% were uncertain. These results underline significant variations in screening preferences, with ultrasound emerging as the more favored option among participants, suggesting areas where awareness initiatives may be beneficial.

Conclusion

Schoolchildren revealed minimal understanding of risk factors for breast cancer, inadequate usage of BSE, and a preference for ultrasonography over mammography; college students showed a moderate level of knowledge, with higher rates of BSE practice, moderate risk factor awareness, and familiarity with both ultrasonography and mammography, but knowledge gaps and ambiguities remained; university students showed the highest level of knowledge about BSE, risk factors, and clinical screening tools, but there were still serious uncertainties and uneven use of these tools.

Recommendations

To address these awareness gaps, it is advised that comprehensive educational initiatives be devised and executed to improve public knowledge about breast cancer. These programs should focus on promoting the importance of early detection through self-examination, clarifying common misconceptions about the disease and its treatment, and providing training on palpation techniques. Furthermore, initiatives aimed at increasing awareness of diagnostic tools like mammography and ultrasound should be prioritized. By increasing awareness of breast cancer, we can enable people to make proactive efforts in their health management and contribute to better results in breast cancer identification and treatment.

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