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Study On Breast Cancer Awareness And Knowledge Among Female University Students Using Self-Administered Questionnaire

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ABSTRACT

Background: There are about 1.38 million new cases and 458000 deaths from breast cancer each year. In developed and emerging nations, breast cancer is by far the most prevalent cancer in women globally.

Aim: To investigate student's knowledge and attitude about breast cancer risk factors, as well as screening programs as the risk factors with induced stigma in students.

Materials and Methods: A self-administered comprehensive online survey-based questionnaire was randomly circulated to female students (N=300) from university technical and medical field associates backgrounds. The data was compiled from student responses to questions on breast cancer.

Results and Conclusions: From the study, we conclude that technical students had a poor degree of comprehension as compared to medical field-associated students, who had a reasonable level of knowledge. Students have varying perspectives on social stigma and obstacles to breast cancer screening procedures. Breast cancer is a treatable condition because if it is diagnosed in time, the chances of recovery are greater. The best way to do this is to be conscious of how it can be detected and can be diagnosed early. This innovative study on social stigma and cancer treatment is at the forefront of adoption.

Keywords: Breast Cancer, Awareness, Disease Prognosis, Screening Approaches, Prevention Practice, Innovative Parameters, Social Stigma, Community Medicine, Public Health.

1. INTRODUCTION

Breast cancer is the most common cancer in women and, after lung cancer, the second leading cause of cancer death. It is one of the few cancers where large-scale secondary detection (screening) services have been seen to be beneficial (Domeyer and Sergentanis 2020). Breast cancer is a form of cancer that develops in the breast tissue, most commonly in the inner lining of the milk ducts or the lobules that supply the ducts with milk. Breast cancer is almost 100 times more common in women than in men, and males tend to have poorer

outcomes due to diagnosis delays (Sharma et al. 2010). Formalized paraphrase Mammography is a widely used diagnostic method for breast cancer detection that has been shown to significantly reduce mortality. Other screening methods, such as Magnetic Resonance Imaging, have also been developed and studied in the last decade (Drukteinis et al. 2013).

This study was identified as a contributing factor to 32 PubMed studies and 350 ScienceDirect studies conducted in the previous five years. According to the results from (Montazeri et al. 2008), conducting breast self-examination is substantially linked to age, marital status, gender, the experience of breast cancer, and knowledge of breast cancer screening services. In the study of (Nafissi et al. 2012), educational status was shown to have a substantial relationship with awareness and mindset with postgraduates having a better understanding and outlook about breast cancer signs, risk factors, and early detection procedures. (Tazhibi and Feizi 2014), showed that higher educational credentials, participation in screening and public educational services, personal issues, and family history of BC were the most important predictors of the high level of knowledge. (Sathian et al. 2014) suggest that Nepalese women have a low degree of breast cancer sensitivity, including knowledge of warning signs and breast self-examination.

Breast cancer is also being treated in secret. The majority of patients learn about their condition through weekly screenings. Others may experience an unexpected breast lump, a shift in breast shape or size, or nipple discharge (Alkabban and Ferguson 2020). Formal paraphrase An early diagnosis of the disease will result in a positive prognosis and a high survival rate (Sun et al. 2017) Age, hormone fluctuations, prior or family history of breast cancer, genetic predisposition, and environmental factors have all been attributed to an increased risk of developing female breast cancer (Shah, Rosso, and Nathanson 2014). Formalized paraphrase As detected early, it is a potentially curable cancer; but, when discovered late, it is inevitably lethal (Becker 2015) The persistence of stigma, fear, gender inequality, and reduced interest in screening activities such as breast self-examinations contribute to elevated mortality rates and barriers such as a lack of literacy among women (Gupta, Shridhar, and Dhillon 2015). According to the World Health Organization, formalized paraphrase, improving the outcome of breast cancer and treatment by early detection remains a cornerstone of breast cancer prevention (Shah, Rosso, and Nathanson 2014).

2. MATERIALS AND METHODS

Study design

A descriptive online survey-based, self-administered questionnaire was circulated among female students in Saveetha School of Engineering College, Chennai, Tamil Nadu. The information was collected from the responses of students regarding breast cancer. The descriptive analysis makes up the majority of internet surveying and is considered definitive because of its objective aspect.

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The primary concept behind using this method of study is to help describe a viewpoint, attitude, or action held on a given topic by a group of individuals. Think about the regular multiple-choice question. It is called descriptive analysis since there are predefined categories that a respondent must select from. Such problems would not offer new perspectives into topics such as exploratory testing. Instead, statistically inferable evidence would be given by sorting the answers into predetermined choices. This helps us quantify the effect of our observations on the general community we are studying and the shifts in our respondents' beliefs, perceptions, and activities over time.

Study Questionnaire

A self-administered questionnaire was developed using previously published papers (Madubogwu et al. 2017; Ramakant et al. 2018). It is a questionnaire that has been deliberately designed to be answered by a respondent without the data collection involvement of the researchers and is a cost-effective way to easily gather vast quantities of information in a relatively brief period from a large number of participants.

Data collection

A total of 300 female students participated in this survey and the information was collected from the responses of each individual for data analysis. This study was planned to determine the level of concern among university students about breast cancer. We focused primarily on views of breast cancer triggers, adverse outcomes associated with breast cancer, and understanding of methods of breast review. Participants were female students from different departments of the university. The google form link for the questionnaire was shared with students online and the responses were recorded.

Statistical Analysis

The findings were evaluated using SPSS version 21 statistical analysis. The dependent variables are technical and medical field associated categories, while the independent variables are awareness of potential risks, early signals identification, and other alert signs. To predict the relationship between the outlined variables, a Chi-square test was used. The test's lowest value means that the authentication was most obviously correct. $P<0.05$ and a confidence interval (CI) of 95% have been used as cutoffs for statistically significant correlations.

3. RESULTS

This research examined the awareness and insight of breast cancer amongst university students. The data collected is categorized and given in the tables labeled. Table 1 discusses the participants' awareness of breast cancer symptoms. Table 2 addresses the participants' knowledge of breast cancer screening strategies. Table 3 contains information about participants' awareness of breast cancer outward indications, with 46% agreeing that if the breast or chest wall is affected, symptoms may include pain, nipple discharge, or a lump or thickening of the breast or underarm, and 22.7% unaware of the potential risks. The data in

Table 4 contains stigma on screening systems and procedures, and the participants' views about breast cancer screening differed, with just 44.3% aware of clinical breast examination and 43.3% aware of mammography. Table 5 contains varying aspects of obstacles to breast cancer screening by participants, with a total of 54% of participants believing that acceptance to touch the body was an obstacle to screening and 53.7% believing that not feeling secure communicating about their symptoms with the doctor was a barrier.

The cross-tabulation following in Table 6a displays the frequency distribution of two categorical variables (Group vs Potential hazards) in a contingency table to decide if the two variables are associated. To test the null hypothesis, the Chi-Square test was used in Table 6b. The significance value must be 0.05 or less for the relationship between the variables to be statistically important. The significance was 0.029, suggesting that the interaction between the branch and possible hazards was statistically significant. The following cross-tabulation in Table 7a displays the frequency distribution of two categorical variables (Group vs EarlySigns detection) in a contingency table to decide if the two variables are associated. To test the null hypothesis, the Chi-Square test was used in Table 7b where the significance value must be 0.05 or less for the relationship between the variables to be statistically important. The significance was 0.239, suggesting that the interaction between the branch and possible hazards was statistically insignificant.

The cross-tabulation in Table 8a shows the frequency distribution of two categorical variables (Group vs Screening methods) in a contingency table to determine whether the two variables are related. The Chi-Square test was used to test the null hypothesis, as seen in Table 8b. For the relationship between the variables to be statistically significant, the significance value must be 0.05 or less. The significance level was 0.001, indicating that the relationship between the group and screening methods was statistically significant. The cross-tabulation in Table 9a compares the frequency distributions of two categorical variables (Group vs Prevention practices) in a contingency table to see if they are associated with each other. As seen in Table 9b, the Chi-Square test was used to test the null hypothesis. The significance value must be 0.05 or less for the interaction between the variables to be statistically meaningful. The significance level was 0.778, suggesting that there was no statistically significant association between the group and prevention practices.

The bar graph in Fig. 1 depicts the rate of breast cancer sensitivity on potential hazards and early signs detection for technical and medical field-associated students, with error bars at the 95% confidence interval. Both technical and medical field-associated students tend to have an average level of knowledge. Medical field-associated students have significantly more knowledge on potential risks and early warning signs detection than technical students. The X-axis represents the mean of the potential hazards and early signs detection, while the Y-axis represents the sample category ±1 SD. A bar graph with error bars at the 95% confidence interval comparing the rate of breast cancer awareness on screening approaches and prevention activities for technical and medical field associated students was shown in Fig. 2. When comparing screening approaches to preventive practices, technical students appear to

have the same overall level of knowledge on all aspects. Medical field-associated students, on the other hand, have a higher level of knowledge on screening methods. We may conclude that medical field-associated students are much more knowledgeable about screening strategies and preventive activities than technical students. The X-axis measures the mean of screening approaches and prevention practices, while the Y-axis represents the sample category ±1 SD.

4. DISCUSSION

The quantitative variables were defined using measurements with a mean and standard deviation of 21.52 ± 2.17 years. The technical and medical field associated students used the Chi-square test and P-value to assess the significance of the relationship between the variables. P-values less than 0.05 (α) are called statistically significant. The Pearson chi-square coefficient for potential hazards was 7.061, with a P-value of 0.029 and for early signs detection was 2.865, with a P-value of 0.239. The Pearson chi-square coefficient for screening approaches was 16.751, with a P-value of 0.001, and the Pearson chi-square coefficient for preventive practices was 0.502, with a P-value of 0.778. As a result, we can conclude that the association between the variable's potential hazards and screening methods is statistically significant, while early signs detection and preventive practices was statistically insignificant at a significance level of 0.05.

Previous researches indicates that educational efforts are needed to raise public awareness of breast cancer and to overcome obstacles to early detection (Elshami et al. 2018) and the majority of university students are at a point where it is important that they practice BSE on a routine basis and theoretically notice any differences early (Sambanje and Mafuvadze 2012). The potential hazard of breast carcinoma(48.3%), types of breast carcinoma (41.7%), symptoms with signs of early warning (38.3%), mass formation (44.7%), infection (41.7%), pus formation (31.7%), deformation and cell outgrowth in breast (43.7%), nipple infection and discharge (45.7%), redness, swelling, itchiness and skin irritation (42%), rashes on the skin (30.7%) were reported. Embarrassing to inform others (40.3%), embarrassed to uncover the breasts (48.3%), avoidance of clinics and health services (46.3%), trouble communicating to a specialist (45.7%), fearful of getting mammography (45.3%), and lack of awareness (52.7%) were among the obstacles to screening procedures listed by students. The screening procedure is used for high-risk screening in women, according to 38.3% of participants. In India, there have been few studies on cancer awareness and screening behaviors (Elshami et al. 2018). Knowledge of tumors and cancer screening techniques will aid in early detection, recovery, and a healthier outcome (Sahu, Subba, and Giri 2020). The information was compared among technical and medical field associated students, with the medical field students (58.3%) demonstrating a substantial statistical difference as a comparison to the technical students (30.2%). Just 45.7% of medical field-associated students visited educational campaigns and health centers (39.7%). The majority of participants were aware of breast cancer but were unaware of its perception and awareness (73%).

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According to similar findings, there is a significant difference between their level of consciousness and their education level (P and Kerketta 2019; Vasishta et al. 2018). A major variation for those who are conscious of breast self-examination but do not practice it was observed. The study's key domains were socio-demographic data, breast cancer awareness, breast cancer prevention, breast self-examination, clinical breast examination, and mammography. The findings of our research are also very convincing.

The study's drawbacks included students' varying behaviors and their lack of familiarity with an early breast cancer diagnosis. Those with a family history of breast cancer were more likely to understand breast cancer risk factors. Among women, social stigma was a major influence, resulting in a lack of medical examination. This work will assist researchers and physicians in determining how awareness of social stigma should be applied to structure cancer stigma analysis, which can affect future studies and clinical procedures. The study offers crucial information for understanding baseline improvements in a patient population and will direct further research to standardize best practices in breast cancer care and public health policies.

Table 1: This table consists of data related to the awareness of breast cancer symptoms in participants.

Variables	Agree (%)	Disagree (%)	Not Sure (%)
Have you previously learned anything about breast cancer symptoms?	134 (44.7)	103 (34.3)	63 (21)
Have you ever had any signs of breast cancer?	80 (26.7)	124 (41.3)	96 (32)
Are you certain you'd notice a difference in your breasts?	135 (45)	80 (26.7)	85 (28.3)
Have you ever heard of breast cancer risks?	145 (48.3)	87 (29)	68 (22.7)
Would you prefer breast cancer preventative practices?	188 (62.7)	49 (16.3)	63 (21)

Table 2: The below table consists of information on awareness of screening methods in the participants.

Variables	Agree (%)	Disagree (%)	Not Sure (%)
Are you aware of breast cancer examination methods?	119 (39.7)	118 (39.3)	63 (21)

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Have you ever practiced any of the breast cancer examination methods?	71 (23.7)	131 (43.7)	98 (32.7)
Have you ever heard of breast self-examination?	137 (45.7)	97 (32.3)	66 (22)
Have you ever performed breast self-examination?	108 (36)	107 (35.7)	85 (28.3)
Have you ever heard of screening methods for breast cancer?	162 (54)	72 (24)	66 (22)
Have you heard of the Clinical Breast Examination (CBE)?	133 (44.3)	96 (32)	71 (23.7)
Have you heard of mammography?	142 (47.3)	69 (23)	89 (29.7)
Have you ever done mammography?	57 (19)	243 (81)	-

Table 3: The table below includes details about participants' awareness of breast cancer warning signs, of which 46% agree that if the breast or chest wall was affected, symptoms may include pain, nipple discharge, or a lump or thickening of the breast or underarm, and 22.7% are unaware of the possible risks.

Variables	**Agreed (%)**	**Disagreed (%)**	**Not sure (%)**
Have you ever heard of potential hazards for breast cancer?	145(48.3%)	87(29%)	68(22.7%)
Do you know that breast cancer can be seen in males?	120(40%)	103(34.3%)	77(25.7%)
Do you think breast cancer can come back or recur, long after treatment?	130(43.3%)	81(27%)	89(29.7%)
Cancer is more likely to come back the following surgery in the first 2 years	114(38%)	87(29%)	99(33%)
Do you know that there are different types of breast cancer?	125(41.7%)	95(31.7%)	80(26.7%)
Do you think there will be some symptoms of cancer that recurred?	115(38.3%)	87(29%)	98(32.7%)

Breast replacement (reconstruction) surgery can lead to an accumulation of scar tissue or fat cells. Such lumps are not cancer	131(43.7%)	90(30%)	79(26.3%)
Do you think the following are warning signs of cancer?			
Change in the mass of the breast	134(44.7%)	67(22.3%)	99(33%)
Infection in the breast	125(41.7%)	74(24.7%)	101(33.7 %)
Breast pain that doesn't go away after your next period	130(43.3%)	76(25.3%)	94(31.3%)
A new lump that doesn't go away after your next period	132(44%)	89(29.7%)	79(26.3%)
Nipple discharge from one breast that is clear, red, brown, or yellow	137(45.7%)	79(26.3%)	84(28%)
Unexplained redness, swelling, skin irritation, itchiness, or rash on the breast	126(42%)	82(27.3%)	92(30.7%)
Swelling or a lump around the collarbone or under the arm	126(42%)	86(28.7%)	88(29.3%)
Enlargement of one breast	135(45%)	75(25%)	90(30%)
An existing lump that gets bigger	126(42%)	91(30.3%)	83(27.7%)
An "orange peel" texture to the skin	122(40.7%)	81(27%)	97(32.3%)
Vaginal pain	88(29.3%)	105(35%)	107(35.7 %)
Unintentional weight loss	122(40.7%)	84(28%)	94(31.3%)
Enlarged lymph nodes in the armpit	124(41.3%)	93(31%)	83(27.7%)
Visible veins on the breast	122(40.7%)	80(26.7%)	98(32.7%)
If the breast or chest wall is affected, symptoms may include pain, nipple discharge, or a lump or thickening in the breast or underarm	138(46%)	80(26.7%)	82(27.3%)

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Table 4: The table contains stigma on screening systems and procedures, and the participants' views about breast cancer screening differed, with just 44.3% aware of clinical breast examination and 43.3% aware of mammography.

Variables	Agree (%)	Disagree (%)	Not sure (%)
Heard of screening methods?	162 (54%)	72 (24%)	66 (22%)
The screening method is used for high-risk detection in women	115 (38.3%)	97 (32.3%)	88 (29.3%)
Heard of Clinical Breast Examination (CBE)?	133 (44.3%)	96 (32%)	71 (23.7%)
CBE a useful tool for the detection of breast cancer?	113 (37.7%)	89 (29.7%)	98 (32.7%)
Heard of mammography?	142 (47.3%)	69 (23%)	89 (29.7%)
Is mammography a useful tool for the early detection of breast cancer?	130 (43.3%)	74 (24.7%)	96 (32%)
Ever done mammography?	57 (19%)	243 (81%)	-

Table 5: The table below contains varying aspects of obstacles to breast cancer screening by participants, with a total of 54% of participants believing that acceptance to touch the body was an obstacle to screening and 53.7% believing that not feeling secure communicating about their symptoms with the doctor was a barrier.

Variables	Agree (%)	Disagree (%)	Not sure (%)
Acceptable to touch my body	162 (54%)	82 (27.3%)	56 (18.7%)
Embarrassing to tell people about	121 (40.3%)	101 (33.7%)	78 (26%)
No idea about what other people think	123 (41%)	97 (32.3%)	86 (26.7%)
Stigma following the diagnosis of cancer	131 (43.7%)	85 (28.3%)	84 (28%)
Feeling shy to uncover my breasts	145 (48.3%)	76 (25.3%)	79 (26.3%)

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Fear of hospitals and health facilities	140 (46.3%)	91(30.3%)	69 (23%)
Feeling worried about what a doctor might find	138 (46%)	82 (27.3%)	80 (26.7%)
Difficulty talking to a doctor	137 (45.7%)	83 (27.7%)	80 (26.7%)
Lack of knowledge	158 (52.7%)	73 (24.3%)	69 (23%)
Fear of physicians and examiners	139 (46.3%)	84 (28%)	77 (25.7%)
Afraid of having mammography	136 (45.3%)	93 (31%)	71 (23.7%)
Busy, no time to do it	55 (18.3%)	155 (51.7%)	90 (30%)
The awareness program is deficient	160 (53.3%)	82 (27.3%)	58 (19.3%)
Not feeling confident talking about my symptom with the doctor	161 (53.7%)	77 (25.7%)	62 (20.7%)

Table 6a: The following cross-tabulation displays the frequency distribution of two categorical variables (Group vs Potential hazards) in a contingency table to decide if the two variables are associated.

		Potential_hazards			
		Yes	**No**	**Not sure**	**Total**
Group	**Technical**	61	50	39	150
	Medical field associates	84	37	29	150
Total		145	87	68	300

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Table 6b: To test the null hypothesis, the Chi-Square test was used. The significance was 0.029, suggesting that the interaction between the groups and potential hazards was statistically significant.

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	7.061	2	0.029
Likelihood Ratio	7.089	2	0.029
Linear-by-Linear Association	5.617	1	0.018
N of Valid Cases	300		

Table 7a: The following cross-tabulation displays the frequency distribution of two categorical variables (Group vs EarlySigns detection) in a contingency table to decide if the two variables are associated.

		EarlySigns_detection			**Total**
		Yes	**No**	**Not sure**	
Group	**Technical**	55	35	60	150
	Medical field associates	63	41	46	150
Total		118	76	106	300

Table 7b: To test the null hypothesis, the Chi-Square test was used. The significance was 0.239, suggesting that the interaction between the branch and possible hazards was statistically insignificant.

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Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	2.865	2	0.239
Likelihood Ratio	2.871	2	0.238
Linear-by-Linear Association	2.158	1	0.142
N of Valid Cases	300		

Table 8a: The cross-tabulation below shows the frequency distribution of two categorical variables (Group vs Screening methods) in a contingency table to determine whether the two variables are related.

		Screening_methods			
		Yes	**No**	**Not sure**	**Total**
Group	**Technical**	63	44	43	150
	Medical field associates	98	29	23	150
Total		161	73	66	300

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Table 8b: The Chi-Square test was used to test the null hypothesis, as seen in the table below. The significance level was 0.001, indicating that the relationship between the group and screening methods was statistically significant.

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	16.751	2	<.001
Likelihood Ratio	16.931	2	<.001
Linear-by-Linear Association	15.311	1	<.001
N of Valid Cases	300		

Table 9a: The cross-tabulation below compares the frequency distributions of two categorical variables (Group vs Prevention practices) in a contingency table to see if they are associated with each other.

	Prevention_practices			
	Yes	**No**	**Not sure**	**Total**

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Group	**Technical**	92	24	34	150
	Medical field associates	96	25	29	150
Total		188	49	63	300

Table 9b: As seen in the table below, the Chi-Square test was used to test the null hypothesis. The significance level was 0.778, suggesting that there was no statistically significant association between the group and prevention practices.

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	0.502	2	0.778
Likelihood Ratio	0.503	2	0.778
Linear-by-Linear Association	0.406	1	0.524
N of Valid Cases	300		

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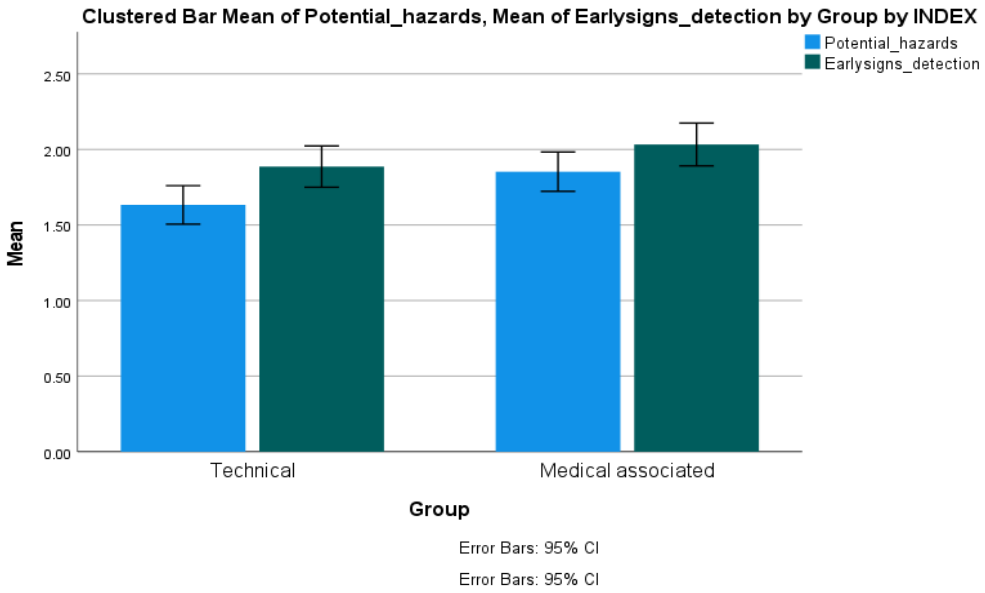

Fig. 1 A bar graph measuring the rate of breast cancer sensitivity on potential hazards and early signs detection for technical and medical field-associated students, with error bars at the 95% confidence interval. Both technical and medical field-associated students tend to have an average level of knowledge. Medical field-associated students have significantly more knowledge on potential risks and early warning signs detection than technical students. The X-axis represents the mean of the potential hazards and early signs detection, while the Y-axis represents the sample category ±1 SD.

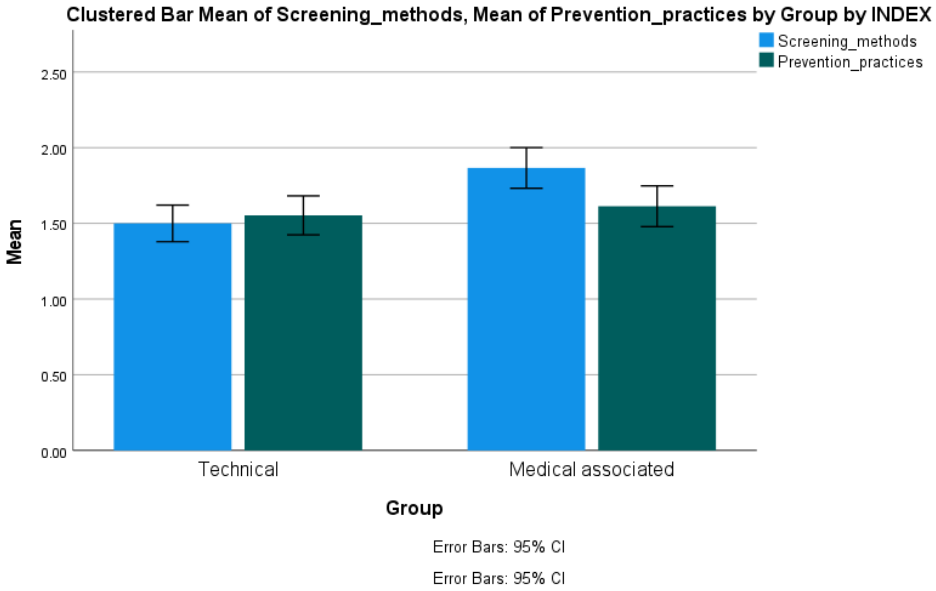

Fig. 2 A bar graph with error bars at the 95% confidence interval comparing the rate of breast cancer awareness on screening approaches and prevention activities. When comparing screening approaches to preventive practices, technical students appear to have the same overall level of knowledge on all aspects. We conclude that medical field-associated students are much more knowledgeable about screening strategies and preventive activities than technical students. The X-axis measures the mean of screening approaches and prevention practices, while the Y-axis represents the sample category ±1 SD.

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5. CONCLUSION

From the study, we may conclude that medical field-associated students are much more knowledgeable about screening strategies and preventive activities than technical students. Screening approaches (P<0.001) were statistically more significant than preventive practices (P=0.778). Students have varying perspectives on social stigma and obstacles to breast cancer screening procedures. The research suggests that technical students had a poor perception as compared to medical field-associated students, who had a reasonable level of knowledge. The major difference in outcome indicated the lack of awareness attributable to potential hazards and early signs detection was discovered to have retarded information among technical female students and can be remedied using innovative preventive steps. This innovative study on stigma and cancer treatment is at the forefront of adoption.

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