

1 **DOI: <https://doi.org/10.47391/JPMA.550>**

2
3 **Breast cancer awareness among pharmacy and physiotherapy**
4 **students of medical university Nawabshah**

5
6 **Rao Irfan, Hisbullah Memon, Ishfaque Nazeer Umrani, Habibullah**
7 **Soomro**

8 Institute of Pharmaceutical Sciences, Peoples University of Medical Health Sciences for
9 Women, Nawabshah, Pakistan

10 **Correspondence:** Rao Irfan **Email:** raoirfan1@pumhs.edu.pk

11
12 **Abstract**

13 **Objective:** To evaluate the knowledge and awareness of students at a medical
14 university regarding possible risk factors and screening modalities of breast
15 cancer.

16 **Methods:** The cross-sectional study was conducted from January to April 2019
17 at the People's University of Medical and Health Sciences for Women,
18 Nawabshah, Pakistan, and comprised young female students from first year to
19 final year at the Institute of Pharmaceutical Sciences and the Institute of
20 Physiotherapy and Rehabilitation Sciences of the university. Data was collected
21 using a predesigned questionnaire, and was analysed using SPSS 21.

22 **Results:** Of the 450 students approached, 375(84%) completed the
23 questionnaire. The mean age of the participants was 21.06±1.164 years (range:
24 18-26 years). Overall, 225(60%) students said contraceptive pills could increase
25 the risk of breast cancer, 267(71.2%) agreed that breast-feeding could reduce
26 cancer risk, while 361 (96.27%) of the students had good mammography and
27 clinical breast examination knowledge. Also, 308(82.13%) respondents knew
28 about breast self-examination, but were not aware of its procedure.

29 **Conclusion:** Majority of the subjects had knowledge and awareness about
30 breast cancer, its risk factors, diagnostic parameters and possible treatment
31 options, but they did not have knowledge regarding the procedures of breast
32 self-examination.

33 **Key Words:** Breast cancer, Risk factors, Mammography, Breast self-
34 examination.

35

36 **Introduction**

37 Globally, cancer is one of the most significant health problems¹. Cancer is
38 expected to be ranked as the most leading cause of overall deaths from non-
39 communicable diseases and contributing as a fundamental barrier to increasing
40 life expectancy for the world in the 21st century. In 2015, the World Health
41 Organisation (WHO) reported cancer as the second foremost cause of deaths at
42 age <70 years in 91 out of 172 countries, while it stood third or fourth in an
43 additional 22 countries².

44 Worldwide, the most prevalent cancer among females is breast cancer³. A
45 woman's breast normally consists of glands, or lobules, to generate milk,
46 stroma, which contain connective tissues and fatty tissues, milk-carrying ducts
47 originating from the lobules to the nipples, and lymphatic as well as blood
48 vessels⁴. Breast cancer is a malignant tumour that develops from breast cells.
49 Mostly, it begins in the breast ducts, sometimes in breast lobules and rarely in
50 stromal tissues before it proliferates from its originating site and metastasizing
51 into various parts of the body^{3,4}.

52 In Asia, the most common cancer in women is breast cancer, and, after lung
53 cancer, it is the second most common cause of cancer deaths⁵. Among the total
54 cancer cases, it comprises 23% and its prevalence as a common female
55 malignancy is increasing globally¹. Breast cancer is diagnosed in more than 1.2
56 million women annually⁶. Through 2008, annually 458,000 females died from
57 breast cancer and 1.3 million new cases for breast cancer were reported⁷.

58 Breast cancer is the most commonly diagnosed cancer (1 in 5 patients) amongst
59 females in Pakistan⁸. Compared to other Asian countries, Pakistan has the
60 highest age-standardised prevalence rate of breast cancer and it is about 2.5
61 times of that in Iran and India. Of the female cancer patients registered at the
62 Nuclear Medicine, Oncology and Radiotherapy Institute (NORI), Islamabad,
63 breast cancer constitutes 33% of its patients^{6,9}.

64 About 5,000 female patients with breast cancer were diagnosed and treated at
65 atomic energy cancer hospitals (AECHs) in 2015-16. About 85% of the entire
66 cancer patient burden of Pakistan is borne by Pakistan Atomic Energy
67 Commission (PAEC) hospitals, and each year the turnout of patients is
68 amplified about 8-10%¹⁰. Under-diagnosis related to breast cancer is the key
69 reason for increased death rate in Pakistan. Diagnosis is made at a very late
70 stage in rural regions due to lack of awareness¹¹.

71 Many of the possible characteristics attesting to be risk factors include family
72 history, weight, age, hormonal changes, reproductive factors, physical activity
73 and smoking. Females belonging to middle class families are considerably at
74 high risk of breast cancer, having advancing age, higher body mass index (BMI)
75 and a high proportion of incomplete pregnancies¹⁰. The risk could be decreased
76 to a certain degree by keeping a healthy body mass, breastfeeding and physical
77 workout.

78 Some screening methods for early detection, like mammography, clinical breast
79 examination (CBE) and breast self-examination (BSE), are used. At initial stage
80 when breast cancer is just a localised growth, annual mammography is thought
81 to be the utmost useful procedure for diagnosis¹². At the population level
82 mammographic screening might not be the best technique for early diagnosis of
83 breast cancer due to lack of adequate resources in middle-income countries,
84 including Pakistan. CBE assures cancer reduction at the diagnostic stage
85 because of early detection of symptoms. BSE is not studied for downsizing the

86 tumour at the diagnostic stage, but it improves early identification and reporting
87 of symptoms of breast cancer¹¹.

88 The current study was planned to assess the awareness and knowledge of
89 students at a medical university regarding the risk factors of breast cancer.

90

91 **Subjects and Methods**

92 The cross-sectional study was conducted from January to April 2019 at the
93 People's University of Medical and Health Sciences for Women, Nawabshah,
94 Pakistan. After approval from the institutional ethics review committee, the
95 sample size was calculated based on 5% margin of error and 95% confidence
96 level using Rao software¹³.

97 The sample was raised using non-probability convenience sampling method
98 from among young female students from the first to the final year of studies at
99 the university's Institute of Pharmaceutical Sciences and the Institute of
100 Physiotherapy and Rehabilitation Sciences. All medical, nursing and public
101 health students were excluded.

102 After taking consent from the subjects, data was collected using a pre-designed
103 questionnaire which explored 6 domains: demographics; level of awareness
104 about possible risk factors of breast cancer; awareness about the signs and
105 symptoms of breast cancer; awareness about the diagnostic modalities of breast
106 cancer, especially the attitude of the participants towards mammography and
107 CBE; assessment regarding BSE practice; and knowledge about possible
108 treatment options, including chemotherapy, radiotherapy, lumpectomy and
109 mastectomy.

110 Data was analysed using SPSS 21.

111

112 **Results**

113 Of the 450 students approached, 375(84%) completed the questionnaire. The
114 mean age of the participants was 21.06±1.164 years (range: 18-26 years). The

115 majority of the participants belonged to the rural areas of Sindh province
116 (Figure 1).

117 Overall, 330(88%) subjects knew that breast cancer chances increased with
118 advancing age, 261(69.6%) had knowledge that the risk of breast cancer
119 increased with positive family history, 259(69.06%) claimed that breast cancer
120 is not a contagious disease, and 278(74.13%) agreed that poor personal hygiene
121 enhanced the risk of breast cancer. A significant number of participants agreed
122 that alcohol consumption, junk food intake and obesity were the leading risk
123 factors of breast cancer, and 267(71.2%) marked that breast-feeding can
124 decrease the risk of breast cancer, while 225(60%) claimed that contraceptive
125 pills increased the risk of breast cancer (Table).

126 Further, 243(64.8%) students responded that bloody discharge from the nipple
127 in unmarried females might be an early symptom of breast cancer; 341(90.93%)
128 had knowledge that breast pain can be the cause of breast carcinoma;
129 352(93.86%) responded that existence of lump in breast was significant
130 indicator of cancer in breast; and 330(88%) were aware of the morphological
131 changes in the presence of breast carcinoma (Figure 2).

132 Regarding diagnostic and treatment modalities, 176(46.93%) students pointed
133 biopsy as a tool for diagnosis; 180(48%) marked blood examination;
134 260(69.33%) marked chest X-ray; 361(96.26%) marked mammography and
135 371(98.93%) marked BCE as a diagnostic modality for breast cancer. Also,
136 322(85.86%) participants pointed chemotherapy, 287(76.53%) radiotherapy,
137 349(93.07%) lumpectomy and 340(90.67%) marked mastectomy as treatment
138 options for breast cancer (Figure 3).

139 With regards to BSE, 308(82.13%) participants had knowledge about BSE, and
140 332(88.53%) agreed that BSE is an important tool for the early detection of
141 breast cancer symptoms. There was poor association between the knowledge
142 and practice of BSE (Figure 4).

143

144 Discussion

145 The current study highlighted the awareness of breast cancer among the students
146 of a medical university in Nawabshah, Sindh. The students will have interaction
147 with the community in their professional lives and they can educate the masses
148 about breast cancer and its modalities¹⁴. Although the awareness of Pharmacy
149 and Physiotherapy students was comparatively better than the other university
150 students of general disciplines¹⁵, the overall knowledge was insufficient because
151 they ranged from the first year to the final year, and most of them were from the
152 rural areas of Sindh. More than 85% students agreed that advancing age
153 increased the risk of breast cancer. However, studies have shown that females
154 have suffered in early ages but were diagnosed later in developing and under-
155 developing countries¹⁶.

156 A significant number of participants agreed that poor personal hygiene, alcohol
157 consumption, obesity and junk food intake increased the risk¹⁷. Various studies
158 on cancers explained these factors as potential risk factor in breast cancer, but
159 physical inactivity and tobacco use are the foremost sources of non-
160 communicable illnesses, including different kinds of cancers¹⁸.

161 About 60% of the students agreed that the usage of contraceptive pills was the
162 enhancing risk factor for breast cancer. A few studies have reported the positive
163 association between breast cancer and long-term usage of contraceptive pills¹⁹.

164 About 96% participants of the current study had sufficient knowledge about
165 mammography, which is considered an early detection tool for screening of
166 breast cancer, but is quite costly and out of the reach for people living in rural
167 areas of Sindh⁸.

168 About 71% participants pointed out that breast-feeding decreased the risk of
169 breast cancer. Studies have reported that the number of pregnancies and breast-
170 feeding decreased the numbers of menstrual cycles in a female life and
171 minimised the total exposure to endogenous hormones²⁰.

172 While 82% students had heard about BSE, over 50% of them did not know its
173 procedure.

174

175 **Conclusion**

176 Majority of participants had knowledge about breast cancer, its risk factors,
177 diagnostic parameters and possible treatment options, but they did not have
178 knowledge regarding BSE procedure. Intervention is needed to cover this gap
179 between BSE knowledge and practice in order to detect this problem at an early
180 stage.

181

182 **Disclaimer:** None.

183 **Conflict of Interest:** None.

184 **Source of Funding:** None.

185

186 **References**

187 1. Bano R, Ismail M, Nadeem A, Khan MH, Rashid H. Potential Risk Factors
188 for Breast Cancer in Pakistani Women. *Asi pac J cancer Prev* 2016; 17: 4307-
189 12.

190 2. Bray F, Ferlay J, Soerjomataram I. Global Cancer Statistics. Estimates of
191 Incidence and Mortality Worldwide for 36 Cancers. *cancer J Clin* 2018; 68:
192 394-424.

193 3. Sara Javed, Muhammad Ali, Fatima Ali, Sanam Saiqa Anwar, Nadia Wajid.
194 Status of oxidative stress in breast cancer patients in Pakistani population. *Adv*
195 *Life Sci* 2015; 2: 115-18.

196 4. Ayesha T, Muhammad AT, Azhar K. Prognosis, Prevalence Trend and
197 Different Treatment Options of Breast Cancer in Pakistan. *Austin J Cancer Clin*
198 *Res* 2016; 3: 1066.

- 199 5. Ghoncheh M, Mahdavifar N, Darvishi E, Salehiniya H. Epidemiology,
200 Incidence and Mortality of Breast Cancer in Asia. *Asi Pac J Cancer Prev*. 2017;
201 17: 47-52.
- 202 6. Mahmood H, Faheem M, Mahmood S, Sadiq M, Irfan J. Impact of age, tumor
203 size, lymph node metastasis, stage, receptor status and menopausal status on
204 overall survival of breast cancer patients in Pakistan. *Asi Pac J Cancer Prev*
205 2015; 16: 1019-24.
- 206 7. Sarwar MZ, Shah SFH, Yousaf MR, Ahmad QA, Khan SA. Knowledge,
207 attitude and practices amongst the Pakistani females towards breast cancer
208 screening programme. *J Pak Med Assoc* 2015; 65: 1075-8.
- 209 8. Gilani GM, Kamal S, Akhter AS. A Differential Study of Breast Cancer
210 Patients in Punjab, Pakistan. *J Pak Med Assoc* 2013; 53: 12-4.
- 211 9. Tajamal N, Tajamal R, Tajamal S. Incidence and Prognosis of Breast Cancer
212 among the Females of Islamabad. *Int J Cancer Res Ther* 2019; 4: 1-5.
- 213 10. Firdous S. Breast Cancer Epidemiology, Screening, Treatment and
214 Awareness in Pakistan. *Cancer Ther Oncol Int J* 2017; 7: 8-10.
- 215 11. Iqbal M, Khan MA, Rabbani U, Zafar S. Screening & Awareness of Breast
216 Cancer in an Urban Slum of Pakistan: A Pilot Study. *J Cancer Sci Clin Oncol*
217 2018; 5: 1-5.
- 218 12. Rafique S. Breast Cancer Awareness, Attitude and Screening Practices
219 Among University Students: Intervention Needed. *Biomed J Sci Tech Res* 2018;
220 4: 4-7.
- 221 13. Mukeshimana MM, Nkosi ZZ. Communities' knowledge and perceptions of
222 type two diabetes mellitus in R wanda: a questionnaire survey. *Journal of*
223 *clinical nursing*. 2014(3-4):541-9.
- 224 <http://www.raosoft.com/samplesize.html>
- 225 14. Rebutan HB, Othman HB, Hassan NM, Moe M, Mohamad NQ. Breast
226 cancer knowledge among nursing students in public university. *The Malaysian J*
227 *of Nur* 2018; 10: 3-7.

- 228 15. Oldenmenger WH, Geerling JI, Mostovaya I, Vissers KC, de Graeff A,
 229 Reyners AK, et al. A systematic review of the effectiveness of patient-based
 230 educational interventions to improve cancer-related pain. *Cancer treat reviews*.
 231 2018; 63: 96-103.
- 232 16. Khalis M, Charbotel B, Chajès V, Rinaldi S, Moskal A, Biessy C, et al.
 233 Menstrual and reproductive factors and risk of breast cancer: A case-control
 234 study in the Fez region, Morocco. *PloS one* 2018; 13: 191333.
- 235 17. Sung H, Siegel RL, Torre LA, Pearson Stuttard J, Islami F, Fedewa SA, et
 236 al. Global patterns in excess body weight and the associated cancer burden. *CA:
 237 a cancer J for clin* 2019; 69: 88-112.
- 238 18. Andò S, Gelsomino L, Panza S, Giordano C, Bonofiglio D, Barone I, et al.
 239 Obesity, Leptin and Breast Cancer: Epidemiological Evidence and Proposed
 240 Mechanisms. *Cancers* 2019; 11: 62.
- 241 19. Iversen L, Fielding S, Lidegaard O, Mørch LS, Skovlund CW, Hannaford
 242 PC. Association between contemporary hormonal contraception and ovarian
 243 cancer in women of reproductive age in Denmark: prospective, nationwide
 244 cohort study. *BMJ* 2018; 362: 3609.
- 245 20. Katuwal S, Tapanainen JS, Pukkala E, Kauppila A. The effect of length of
 246 birth interval on the risk of breast cancer by subtype in grand multiparous
 247 women. *BMC cancer* 2019; 19: 199.

248

249

250

251

Table: Awareness of students about breast cancer risk factors

S #	Awareness about risk factors	Yes	No
1	The possibilities of breast cancer increase with advancing age?	330 (88%)	45 (12%)
2	The Positive family history can increase the risk of breast cancer?	261 (69.6%)	114 (30.4%)
3	Is any type of cancer contagious?	116 (30.93 %)	259 (69.0 %)

4	Is poor personal hygiene enhancing the risk of breast cancer?	278 (74.1 %)	97 (25.8 %)
5	Does smoking have any contribution to increase the risk of breast cancer?	300 (80 %)	75 (20 %)
6	Does alcohol consumption threat for breast cancer?	252 (67.2 %)	123 (32.8 %)
7	Does junk foods intake increase the risk of breast cancer?	233 (62.13 %)	142 (37.8 %)
8	Is obesity a risk for breast cancer?	303 (80.8 %)	72 (19.2 %)
9	Can injuries to the breast causing breast cancer?	293 (78.13%)	82 (21.87%)
10	Does breast feed either cause or prevent breast cancer?	108 (28.8%)	267 (71.2%)
11	Do the birth control pills cause of breast cancer?	225 (60%)	150 (40%)

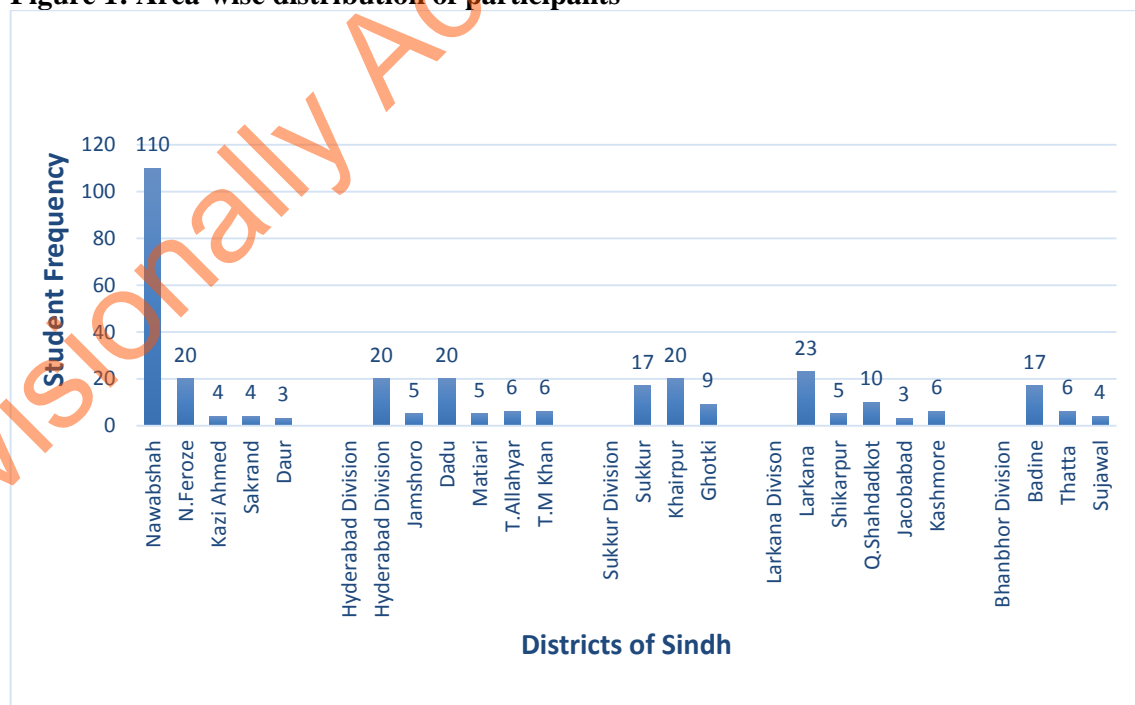
252

253

254

255

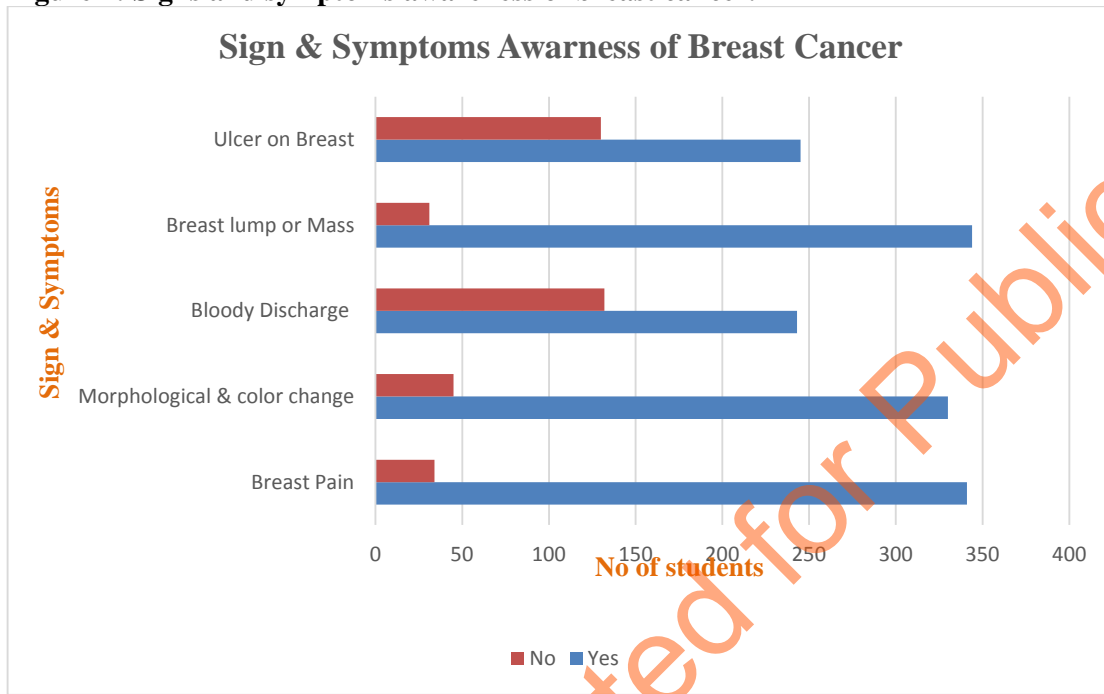
Figure 1: Area-wise distribution of participants



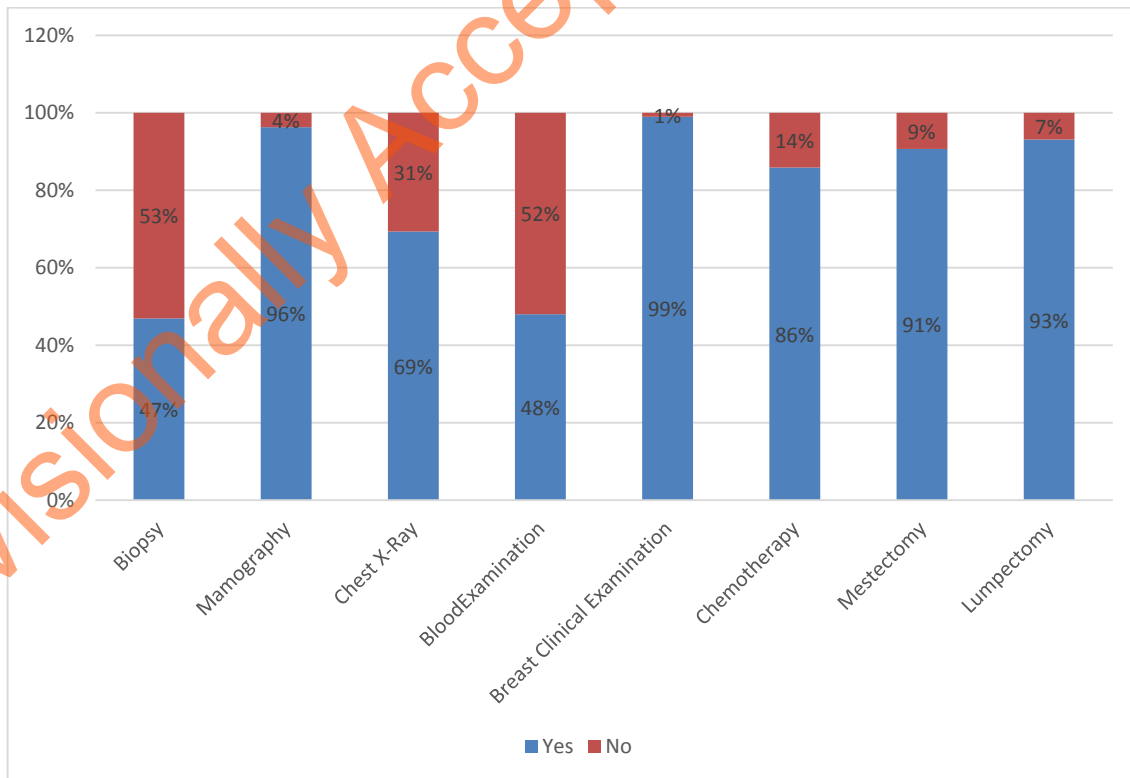
256

257
258
259
260

Figure 2: Signs and symptoms awareness of breast cancer.



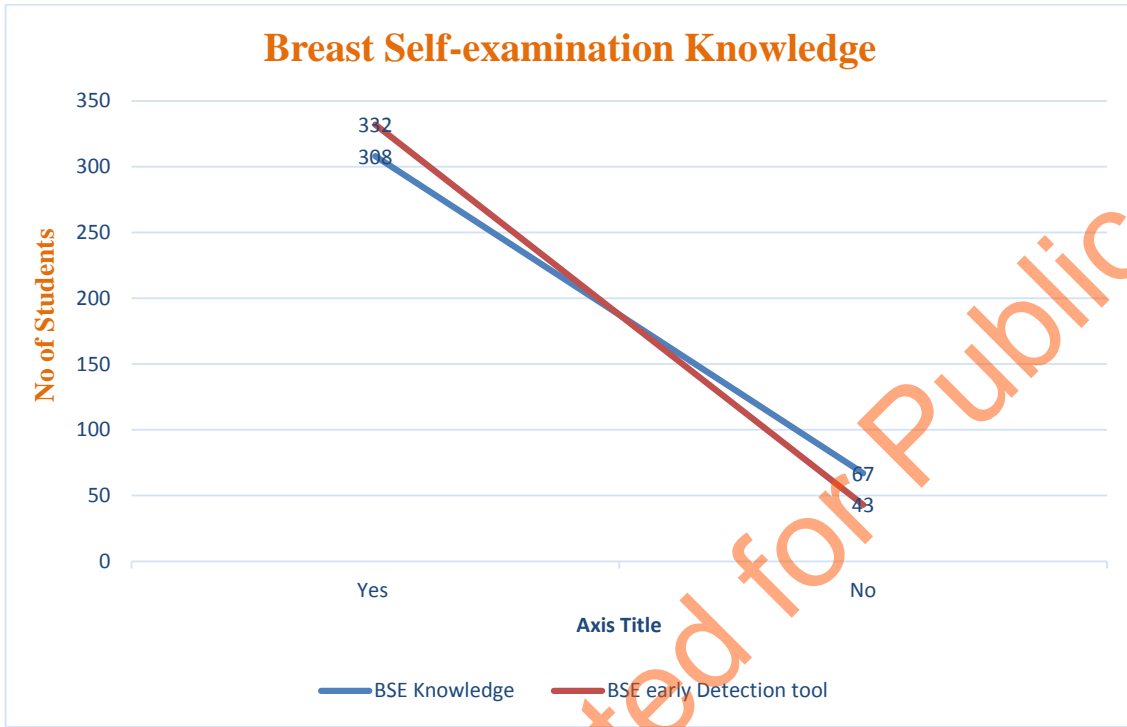
261
262
263
264



265
266

Figure 3: Diagnostic modalities and treatment.

267
268
269



270
271
272

Figure 4: Awareness of Breast self-examination.

Provisionally Accepted for Publication