Female health college students' knowledge and attitude towards breast cancer

Amal A. Hegazy[1,2], Sultan Alamri[3], Majd Ali Alotaibi[4], Maram Fahad Almutairi[4], Maryam Abdulhamid Jabali[4], and Samaher Eid Alsulami[4]

1. Department of Community Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, 21589 Saudi Arabia
2. Department of Community and Occupational Medicine, Faculty of Medicine (for girls), Al-Azhar University, Cairo, 11651, Egypt
3. Department of Family Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, 21589 Saudi Arabia
4. Medical Intern, Faculty of Medicine, King Abdulaziz University, Jeddah, 21589 Saudi Arabia

RESEARCH

Corresponding Author:
Prof. Amal A Hegazy
Community Medicine Department, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia
E-mail: renalahmed@gmail.com

ABSTRACT

Background
Breast cancer is the most common cancer in women in Saudi Arabia and worldwide. It occurs at an earlier age in comparison with Western countries and account for 25.1 per cent of all newly diagnosed female cancers.

Aims
Aim was to assess knowledge level of breast cancer risk factors, the symptoms, the signs and screening methods of early detection among female students at the health colleges. Additionally, to determine the attitude of students towards the breast cancer.

Methods
A cross-sectional study was carried out on a representative sample of female students at the health colleges in King Abdulaziz University, through stratified sampling with proportional allocation.

Results
More than 78 per cent of the students had good knowledge about the symptoms and signs of breast cancer, and 76.8 per cent of them had positive attitude towards believing and treatment of breast cancer. About 75.5 per cent of students mentioned mammography is an early screening method. However, the total score of insufficient knowledge about breast cancer risk factors was 57.5 per cent. Logistic regression analysis revealed that lower grades were the predictors of insufficient knowledge about breast cancer risk factors.

Conclusion
Although the students had a good knowledge about the symptoms and signs of breast cancer and they had positive attitude towards believing and treatment of breast cancer, for example, most of them will consult a doctor if they develop breast cancer and they will agree to perform mastectomy if she needed, they will see a doctor within one week if they have breast lump and they thought that the breast cancer is a curable disease. However, they had insufficient knowledge of some risk factors. So, we should focus on increasing the knowledge of risk factors among the students either through regular update teaching courses and methods or through health education workshop or campaigns.

Key Words
Breast cancer, Health colleges, Knowledge, Attitude, Breast cancer symptoms

What this study adds:

1. What is known about this subject?
Breast cancer in Saudi Arabia is the most common cancer in females and it occurs at an earlier age.

2. What new information is offered in this study?
Nearly 78 per cent of the students had good knowledge about the symptoms and signs of breast cancer; however, they had insufficient knowledge about breast cancer risk factors.

3. What are the implications for research, policy, or practice?
Regular update teaching courses and methods or increasing health education workshop or campaigns to raise knowledge of risk factors among the future health giver.

Background

Breast cancer is the most common cancer in women worldwide. In 2012, it was declared that almost 1.7 million new cases were diagnosed with breast cancer per year.[1,2]

An epidemiological review of breast cancer in Saudi Arabia showed that the number of women with breast cancer increased steadily from 1990–2010 and it occurs at an earlier age in comparison with Western countries.[3]

There are many risk factors associated with breast cancer; the main risk factors for breast cancer are things that cannot change or non-modifiable risk factors as being a woman, getting older, and having certain gene changes. Women who have a first-degree relative (mother, sister, or daughter) with breast cancer almost double a woman's risk. Similarly having 2 first-degree relatives increases her risk about 3-fold. Women who have had more menstrual cycles because they started menstruating early (before age 12) or went through menopause later (after age 55) have a slightly higher risk of breast cancer.[4]

Many studies have shown that overweight and obesity are associated with a modest increase in risk of postmenopausal breast cancer.[5] Combination of hormonal replacement therapy increases breast cancer risk by about 75 per cent, even when used for a short time. While using oestrogen-only increases the risk of breast cancer, but only when used for more than 10 years.[6]

The American Cancer Society guidelines for early detection of breast cancer recommend that; Women age 45–54 should get mammograms every year. Women age 55 and older should switch to mammograms every two years or have the choice to continue yearly screening.[7,8]

The United State Preventive Services Task Force (USPSTF) recommended biennial screening mammography for women aged 50–74 years. Women prior to the age of 50

years have a decision to start screening mammography. Females who place a higher value on the potential benefit than the potential harms may choose to begin two-yearly screening between the ages of 40–49 years.[9,10]

If the breast cancer discovered early usually can be cured, and early discovery through screening is the only method to diminish mortality. Several studies have observed the role of health care workers such as physicians and nurses in encouraging breast cancer screening.[11]

A study was done in Ajman, UAE, reported inadequate knowledge (scores <60 per cent) regarding breast cancer among a high proportion of female university students and on knowledge about the risk factors, warning signs and methods for early detection of breast cancer.[12] Another study was performed on University female students in Majmaah, Saudi Arabia and observed that students' awareness of carcinoma breast was low and there was no significant difference in the level of awareness between students of medical colleges and those of non-medical colleges.[13]

Current awareness and attitude towards breast cancer among female students in the health collages at King Abdulaziz University (KAU) in Jeddah are not evaluated before. The main objective of this study was to assess knowledge level of breast cancer risk factors, symptoms and screening methods of early detection among female students at the health colleges as well to determine the attitude of students towards breast cancer.

Method

Sample frame and recruitment methods
A cross-sectional study was carried out on a representative sample (n=466) of female students in the health colleges at King Abdul-Aziz University, Jeddah, through stratified random sampling with proportional allocation. Selection of students from each college done by systematic sampling technique from each list of names. Ethical approval was obtained from the Institutional Review Board/Ethics Committee and oral consent taken from all participants in the study.

Sample size calculations
The sample size calculated according to number of students in the health colleges and absolute precision of 5 per cent at a 95 per cent confidence, the minimal sample size required for the study was estimated to be 362 students. To account for possible non-responses and for more precision, 20 per cent was added to give a total sample of 435 students was

initially planned to be included in this study, however, we recruited 466 students.

Data collection and analysis

The data were collected by self-administered questionnaire. A structured questionnaire was developed after reviewing the literatures related to breast cancer risk factors.[14-16] It composed of five areas:

1) Demographic data (such as age, residence, marital status, college, year of college (grade).

2) Information regarding individuals' knowledge of breast Cancer risk factors included 12 questions; Aging, Family history of breast cancer, Early menarche (<12 years), Late menopause (>55 years), first full-term pregnancy at late age (>30 years), Oral contraceptive use, Alcohol consumption, Smoking, Obesity (postmenopausal), race, stress, high fat diet.

3) Knowledge about signs and symptoms related to breast cancer included 12 questions; Lump in the breast, Discharge from the beast, Pain or soreness in the breast, Change in the size of the breast, Discoloration /dimpling of the breast, Ulceration of the breast, Weight loss, Changes in the shape of the breast, Inversion/pulling in of nipple, Swelling or enlargement of the breast, Lump under armpit, Scaling/dry skin in nipple region.

4) Knowledge about the methods for early detection of breast cancer, also established using five questions, and;

5) Questions about the attitude towards believing and treatment of breast cancer, for example they will consult a doctor if they develop breast cancer and they will agree to perform a mastectomy or not, when they see a doctor? If they have breast lump and they believe that the breast cancer is a curable disease or not.

Analysis of knowledge area was done by giving a score 1 for a correct answer and zero for an incorrect and by considering mean value as a cut off value to assess knowledge levels, (insufficient and sufficient (good)). To compare knowledge of participants in the different colleges and grades, the total score was calculated for each participant and expressed as percentage. A score less than 60 per cent were considered as an insufficient knowledge.

The collected data was coded, entered, and analysed using SPSS statistical packages. Data was presented using descriptive statistics in the form of frequencies and percentages for qualitative variables; and means and standard deviations (SD) for quantitative variables. Odds ratio and chi-square test were used for categorical variables and the level of significance was considered statistically significant if $P<0.05$. Logistic regression was used to detect the predictors of insufficient knowledge.

Results

A total number of 466 female students of health college in king Abdul-Aziz university, Jeddah, participated in this study. Table 1 shows ages of the participants ranged from 18–24 years with a mean of 20.7 ± 1.2 years. Most of students are single (93.1 per cent) and 99.6 per cent of them live in urban area. The distribution of students according to college as follow: 47.5 per cent medicine, 22.7 dentistry, 12.4 pharmacies and 17.4 nursing. About 27.7 per cent are in the second year, 28.5 per cent are in the third year, while 27.7 per cent and 16.1 per cent are in fourth and fifth years respectively. Approximately 13.5 per cent of them had positive family history of breast cancer, 5.2 per cent had breast problem and 36.3 per cent of the participated students had risk factors ranging from one to more than three risk factors. Majority of students (84.1 per cent) thought that the breast cancer is the most prevalent cancer in women in Saudi Arabia. Only a 41.0 per cent of them reported that they had practiced breast self-examination (BSE).

Concerning source of information about breast cancer, the most common two sources as mentioned by students were; media (internet, TV/Radio) and university educations through lectures, tutorials and workshops (46.78 per cent and 42.27 per cent respectively) (Figure 1).

Distributions of participants' knowledge about breast cancer risk factors and early screening methods among study group is demonstrated in Table 2. The most commonly known risk factors for breast cancer were family history (91 per cent), aging (78.1 per cent), cigarettes smoking (73.8 per cent) oral contraceptive use (61.4 per cent) and alcohol consumption (64.4 per cent). However, only 40.8 per cent, 40.6 per cent, 49.6 per cent, 55.2 per cent of the participants were aware that the early onset of menarche, race, first child at late age (>30 years), late menopause (>55 years) are considered a risk factor for breast cancer, respectively. Additionally, the total score of correct knowledge about breast cancer risk factors was 42.5 per cent (Figure 2) which is considered insufficient knowledge.

Regarding the early screening methods for breast cancer, this study reported that 75.5 per cent of students were reported mammography. Furthermore, the recommended age for mammography was 24.5 per cent, 10.3 per cent and 3.6 of participants described that the age of 40 years, 45 years and 50 years, respectively (Figure 3).

Knowledge about symptoms and signs of breast cancer among participants is shown in Table 3. The common well-known symptoms and signs were lump in the breast (91 per cent), lump under armpit (90.1 per cent), Change in the shape of the breast (88.6 per cent), discharge from the breast (86.3 per cent), discoloration-dimpling of the breast (84.8 per cent), and change in the size of the breast (81.8 per cent). Most of participants had good (correct) knowledge; total score was 78.8 per cent about symptoms and signs of breast cancer (Figure 4).

Table 4 revealed high percentage of students had positive attitude if they develop breast cancer. About 94.4 per cent of them will consult a doctor if they develop breast cancer, 65.5 per cent will agree to perform mastectomy, 76.2 per cent will see a doctor within one week if they have breast lump and 84.8 per cent thought that the breast cancer is a curable disease. Moreover, Figure 5 showed 76.8 per cent of students had positive attitude towards breast cancer.

A significant relationship between the level of knowledge for breast cancer risk factors and years of college was reported in Table 5. As shown in this table 2nd year students had insufficient knowledge 49.6 per cent with comparison to 3rd, 4th, and 5th year students (32.3 per cent, 15.55 and 22.7 per cent, respectively) with odds ratio 2.06, 5.36 and 3.35 respectively.

Although the frequency of good knowledge (76.5 per cent) was higher in the medical students than the frequency in the nursing, dental and pharmaceutical students, however there was no statistically significant difference between them. High frequency of insufficient knowledge was higher among pharmaceutical students (43.15 per cent) (Table 6).

In logistic regression model the only predictors which affect the knowledge about risk factors of breast cancer is the year of the college (grade). Lower grads (2nd and 3rd year students) had 3-fold insufficient knowledge than higher grades (4th and 5th year students) (Table 7).

Discussion

In Saudi Arabia breast cancer is the most common health issues in females. Health college students are considered a role model and health care providers in the futures, so elevating level of knowledge and awareness among them will transmit the right message to the general population during health care sitting which lead to early recognition of breast cancer, then lead to reduction of complications and mortality.

There are a lot of risk factors for breast cancer that affect women, some of them are modifiable and mostly associated with the way people life as social, economic and environmental factors.[17] A study done in United Kingdom, 2010, displayed that 26.8 per cent of occurrence breast cancer cases were attributed to lifestyle and environmental factors.[18] So, it is important to detect knowledge level of breast cancer and increase awareness.

This study was done to discover the level of knowledge towards risk factors, symptoms and signs of breast cancer and, attitude of female health colleges towards believing and treatment of breast cancer. It reported that 78.8 per cent of students had sufficient and good knowledge regarding breast cancer symptoms and signs; This result is nearly similar to studies conducted in Kuwait (88.8 per cent)[19] and Malaysia (78.5),[20] Oman (88.5 per cent),[21] Malaysia (84.6 per cent)[22,23] and Egypt (81.6 per cent),[24] on the contrary, a lower knowledge score of 50.9 per cent was reported in a study was carried out among the female staff of a public university in Malaysia,[25] University of Sharjah and Ajman of UAE (65.1 per cent),[12] and study was conducted on health care workers in Nigeria and stated that the level of knowledge was 55 per cent.[26] Other studies were reported much lower level of knowledge in Saudi Arabia at Majmaah University (34.2 per cent)[27] and female medical students in Taif (14.6 per cent),[28] Jordan[29] and Pakistan.[30] All these studies were carried out on university students and they are highly educated so their knowledge and awareness may be a match to our participants. Improvement of knowledge (High knowledge score) may be attributed to teaching courses they exposed in the university, and/ or more participation in the organization of projects and campaigns of breast cancer related to the courses and/ or from using internet, T.V/ Radio, as they described the most common two sources of information were; media (internet, TV/Radio) and university educations through lectures, tutorials and workshops (46.78 per cent and 42.27 per cent respectively).

Our students had a higher knowledge score of some breast cancer risk factors as family history (91 per cent), aging, cigarettes smoking, oral contraceptive use and alcohol consumption. This result is in accordance with study in Malaysia 2019,[20] and Malaysia 2010,[22] they reported more than 90 per cent of the students were aware of a family history of breast cancer as the highest risk factors and 89.2 per cent was detected in the past history of breast cancer as the risk factors of breast cancer. But other study conducted by Latif, 2014 in Saudi Arabia reported lower score.[31]

However only 40.8 per cent and 40.6 per cent, 49.6 per cent, 55.2 per cent of the participants were aware that the early onset of menarche, race, first child at late age (>30 years), late menopause (>55 years) are considered a risk factor for breast cancer, respectively, so this requires to increase awareness and teaching program about the breast cancer risk factors for our students.

Several attitudes and misconceptions were reported by some studies. A research was done in US, detected that the misconception could be related to delay in seeking health care among symptomatic breast cancer patients.[32] This study stated that 76.8 per cent of students had positive attitudes towards believing and treatment of breast cancer compared with other studies (67 per cent) in Taif,[28] and UAE (44 per cent),[12] however it is lower than some studies done in Malaysia (85 per cent).[20]

This study described that frequency of good knowledge (76.5 per cent) was higher in the medical students than in the nursing, dental and pharmaceutical students, and stated that higher grades (4th and 5th year students) had good knowledge than lower grades (2nd and 3rd years). The variation in knowledge scores among students from different colleges and grades (year of the college) may be due to the differences in basic courses given in different programs all over the years of educations. So, it is important to provide basic data about breast cancer to female through different programs all over the education years to improve awareness related to breast cancer. Majmaah University study[27] observed that no significant difference in the level of knowledge between medical and non-medical students.

Conclusion

The participants had a good knowledge about the symptoms and signs of breast cancer, and they had positive attitude towards believing and treatment of breast cancer, for example, most of them will consult a doctor if they develop breast cancer, they will agree to perform mastectomy, they will see a doctor within one week if they have breast lump and they thought that the breast cancer is a curable disease. However, they had insufficient knowledge of some risk factors. So, we should focus on increasing the knowledge of risk factors among the students either through regular updating the courses and methods of teaching or through health education workshop or campaigns. Good knowledge was higher in the medical students than in the nursing, dental and pharmaceutical students, So, it is important to provide basic data about breast cancer to female through different programs all over

the teaching years to improve awareness related to breast cancer.

Strength and Limitations

One of the strengths in this study that the sample is a representative from all female heath colleges at the University. But the limitation may be that the target population was female students only and male students from health colleges should be included. Also, female students from different colleges must be included in the study.

References

1. Ferlay J, Soerjomataram I, Dikshit R, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in Globocan 2012. International Journal of Cancer. 2014;136(5):E359–86.
2. Alghamdi IG, Hussain II, Alghamdi MS, et al. The incidence rate of female breast cancer in Saudi Arabia: an observational descriptive epidemiological analysis of data from Saudi Cancer Registry 2001–2008. Breast Cancer: Targets and Therapy. 2013;5:103–9.
3. Saggu S, Rehman H, Abbas ZK, et al. Recent incidence and descriptive epidemiological survey of breast cancer in Saudi Arabia. Saudi Med J. 2015;36:1176–80.
4. What are the risk factors for breast cancer? Cancer.org. 2016. Available at: http://www.cancer.org/cancer/breastcancer/detailedguide/breast-cancer-risk-factors.
5. Obesity and Cancer Risk. National Cancer Institute, 2016. Available at: https://www.cancer.gov/about-cancer/causes-prevention/risk/obesity/obesity-fact-sheet.
6. Using HRT (Hormone Replacement Therapy). Breast cancer.org. 2016. Available at: http://www.breastcancer.org/risk/factors/hrt.
7. American Cancer Society recommendations for early breast cancer detection in women without breast symptoms. Cancer.org. 2016. Available at: http://www.cancer.org/cancer/breastcancer/moreinformation/breastcancerearlydetection/breast-cancer-early-detection-acs-recs.
8. Seely JM, Alhassan T. Screening for breast cancer in 2018- what should we be doing today? Curr Oncol. 2018;25(S1):S115–24.
9. United State Preventive Services Task Force (USPSTF). Breast Cancer: Screening. https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening
10. Takkar N, Kochhar S, Garg P, et al. Screening methods (clinical breast examination and mammography) to

detect breast cancer in women aged 40–49 years. Journal of Mid-life Health. 2017;8(1):2–10.

11. Handa U, Akhigbe AO, Omuemu VO. Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. BMC Cancer. 2009;9:203.

12. Al-Sharbatti S, Shaikh RB, Mathew E, et al. Breast cancer awareness among female University students in Ajman, UAE. GMJ, ASM. 2012;1(S2):S36–45.

13. Mohamed EY, Sami W, Alenezi AA, et al. Breast cancer awareness and breast self-examination among future female university graduates: comparison between medical and non-medical students. Int J Res Med Sci. 2016;4(3):685–89.

14. Garcia‑Closas M, Brinton LA, Lissowska J, et al. Established breast cancer risk factors by clinically important tumour characteristics. Br J Cancer. 2006;95:123–29.

15. Nelson HD, Zakher B, Cantor A, et al. Risk factors for breast cancer for women aged 40 to 49 years: A systematic review and meta‑analysis. Ann Intern Med. 2012; 156:635–48.

16. Amasha HAR. Breast self-examination and risk factors of breast cancer: Awareness of Jordanian nurses. Health Science Journal. 2013;7(3):303–14.

17. World Cancer Research Fund (WCRF)/ American Institute for Cancer Research (AICR). Executive summary. Policy and Action for Cancer Prevention. Food, Nutrition and Physical Activity: With an added US Perspective. Factors that affect the risk of cancer: a conceptual framework. AICR: Washington DC; 2010:3. Available from: URL: http://www.aicr.org/assets/docs/pdf/advocacypapers/ WCRF_Policy_US_ Summary_final.pdf

18. Parkin DM, Boyd L, Walker LC. The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010. British Journal of Cancer. 2011;105:77–81.

19. Alharbi N, Alshammari M, Almutairi B, et al. Knowledge, awareness, and practices concerning breast cancer among Kuwaiti female school teachers. Alexandria J Med. 2012;48:75–82.

20. Sheikh Alaudeen SR, Ganesan K. Knowledge, attitude, and practice of Malaysian medical students towards breast cancer: A cross-sectional study. Int Med Care. 2019;3:1–7.

21. Al-Junaibi RM, Khan SA. Knowledge and awareness of breast cancer among university female students in Muscat, Sultanate of Oman-A pilot study. J Appl Pharma Sci. 2011;1:146–49.

22. Hadi M, Hassali M, Shafie A, et al. Evaluation of breast cancer awareness among female university students in Malaysia. Pharma Pract. 2010;8:29–34.

23. Nik Rosmawati NH. Knowledge, attitude and practice of breast self-examination among women in a suburban area in terengganu, malaysia. Asian Pac J Cancer Prev. 2010;11:1503–08.

24. Boulos DNK, Ghali RR. Awareness of breast cancer among female students at Ain Shams University. Egypt Glob J Hlth Sci. 2013;6:154–61.

25. Nor Afiah MZ, Hejar AR, Looi YK, et al. Breast cancer screening: How knowledgeable are female staff of a public university? Int Med J Malaysia. 2011;10:23–30.

26. Akhigbe AO, Omuemu VO. Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. BMC Cancer. 2009;9:203.

27. Alwan NAS, Al-Diwan JKA, Al-Attar WM, et al. Knowledge, attitude & practice towards breast cancer & breast self- examination in Kirkuk University, Iraq. Asian Pacific Journal of Reproduction. 2012;1(4):308–11.

28. Nemenqani DM, Abdelmaqsoud SH, Al-Malki AA, et al. Knowledge, attitude and practice of breast self-examination and breast cancer among female medical students in Taif, Saudi Arabia. Open J Prev Med. 2014;4:69–77.

29. Suleiman AK. Awareness and attitudes regarding breast cancer and breast self-examination among female Jordanian students. J Basic Clin Pharm. 2014;5(3):74–8.

30. Ansari AB, Shahzad N, Bota R, et al. Medical Students' Knowledge and Attitude towards Breast Cancer Risk Factors and Early Detection Practices. Austin Med Sci. 2018;3(1):1024.

31. Latif R. Knowledge and attitude of Saudi female students towards breast cancer: A cross-sectional study. Journal of Taibah University Medical Sciences. 2014;9(4):328–34.

32. Rauscher GH, Ferrans CE, Kaiser K, et al. Misconceptions about breast lumps and delayed medical presentation in urban breast cancer patients. Cancer Epidemiol Biomarkers Prev. 2010;19(3):640–7.

Linah Bataweel, Zainab Alnemer, Maram Misha, Bashair Alzahrani, Alzahra'a Ahmed, Eman Almalki.

PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

FUNDING

None

ETHICS COMMITTEE APPROVAL

Ethical approval was obtained from the Institutional Review Board/Ethics Committee at faculty of medicine, King Abdulaziz University (Reference No 23-18), and oral consent taken from all participants in the study.

Figure 1: Sources of breast cancer information
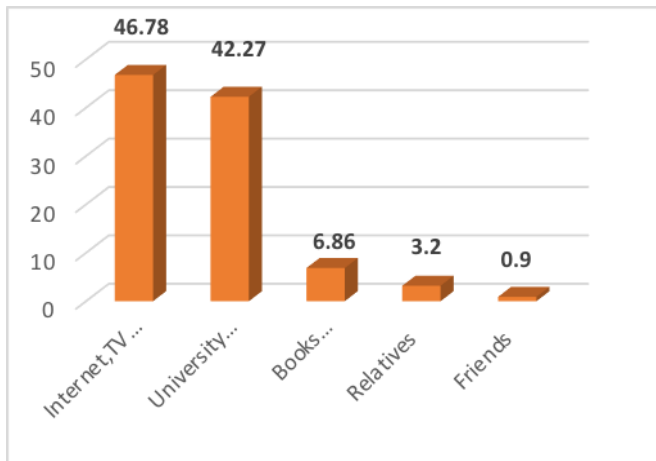

Figure 2: Distribution of knowledge about breast cancer risk factors among participants
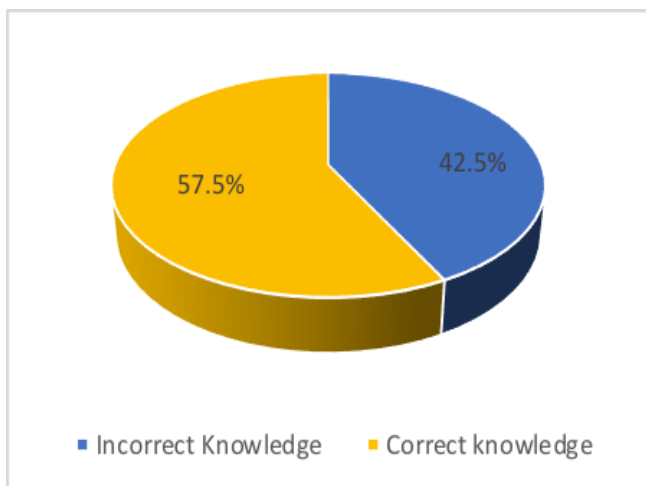

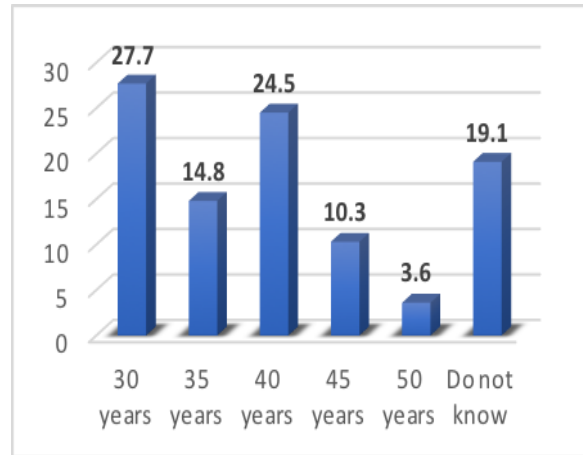**Figure 3: Knowledge about age recommended for mammography examination**

Figure 4: Distribution of knowledge about breast cancer symptoms and signs among participants
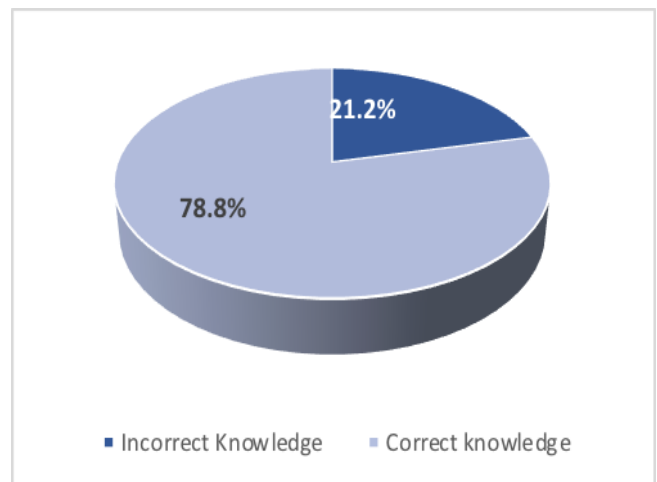

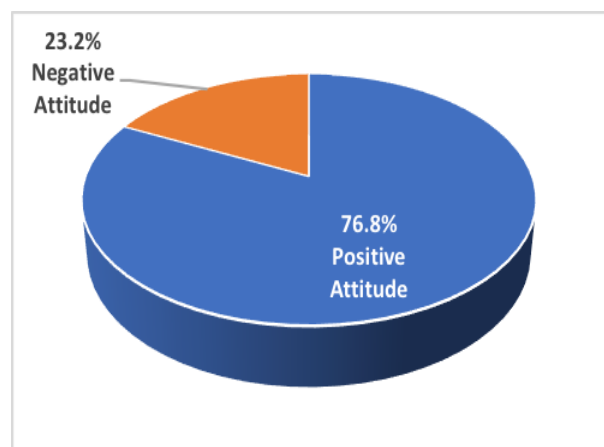**Figure 5: Distribution of students' attitude towards breast cancer**

Table 1: Distribution of participants by socio-demographic characteristics and family history of breast cancer

Variables	Frequency (n=466) n (%)
Age /year	
Mean ± SD	20.7 ± 1.2
Range	18-24
Marital status	
Single	434 (93.1)
Married	16 (3.4)
Engaged	16 (3.4)
Grade	
2nd	129 (27.7)
3rd	133 (28.5)
4th	129 (27.7)
5th	75 (16.1)
Collage	
Medicine	221 (47.5)
Dentistry	106 (22.7)
Pharmacy	58 (12.4)
Nursing	81 (17.4)
Residence	
Urban	464 (99.6)
Rural	2.0 (0.4)
Family history	
Yes	63 (13.5)
No	403 (86.5)
Personal breast problem	
Yes	24 (5.2)
No	442 (94.8)
Do you think that breast cancer is the most prevalent cancer in women in Saudi Arabia?	
Yes	424 (91.0)
No	42 (9.0)
Do you have any risk factors?	
None	297 (63.7)
One risk factor	106 (22.8)
Two risk factors	29 (6.2)
Three risk factors	9 (1.9)
More than three	25 (5.4)

Table 2: Distributions of knowledge about breast cancer risk factors and early screening methods among study group

Risk Factor	Correct knowledge n (%)	Incorrect knowledge n (%)
Increasing age	364 (78.1%)	102 (21.9%)
Positive family history	424 (91.0%)	42 (9.0%)
First child at late age (>30 years)	231 (49.6%)	235 (50.4%)
Early onset of menarche (<12 years)	190 (40.8)	276 (59.2)
Late menopause (>55 years)	257 (55.2)	209 (44.8)
Oral contraceptive use	286 (61.4%)	180 (38.6%)
Smoking	344 (73.8%)	122 (26.2%)
Race	208 (44.6%)	258 (55.4%)
Obesity	251 (53.9%)	215 (46.1%)
Alcohol consumption	300 (64.4%)	166 (35.6%)
High fat diet	237 (50.9%)	229 (49.1%)
Stress	217 (46.6%)	249 (53.4%)
Early screening methods	**Yes n (%)**	**No n (%)**
Breast Self-examination	441 (94.5)	25 (5.4)
Clinical Breast Examination	410 (88.0)	56 (12.0)
Mammography	352 (75.5)	114 (24.5)
Ultrasound	209 (44.8)	257 (55.2)

Table 3: Distributions of knowledge about symptoms and signs of breast cancer among study group

Symptoms and signs	Correct knowledge n (%)	Incorrect knowledge n (%)
Lump in the breast	424 (91.0)	42 (9.0)
Pain or soreness in the breast	367 (78.8)	99 (20.4)
Discharge from the breast	402 (86.3)	64 (13.7)
Change in the size of the breast	381 (81.8)	85 (18.2)

Discoloration-Dimpling of the breast	395 (84.8)	71 (15.2)
Ulceration of the breast	332 (71.2)	134 (28.8)
Weight loss	228 (48.9)	238 (51.1)
Change in the shape of the breast	413 (88.6)	53 (11.4)
Inversion-pulling in of nipple	374 (80.3)	92 (19.7)
Swelling or enlargement of the breast	410 (88.0)	56 (12.0)
Lump under armpit	420 (90.1)	46 (9.9)
Scaling-dry skin in nipple region	304 (65.2)	162 (34.8)

Table 4: Attitude towards breast cancer among study group

Symptoms and signs	Attitude towards breast cancer		
	Yes n (%)	No n (%)	D/N n (%)
If you develop breast cancer: Will be scare	373 (80)	33 (7.1)	60 (12.9)
Will consult a doctor	440 (94.4)	6 (1.3)	20 (4.3)
Will use traditional medicine	103 (22.1)	277 (59.4)	86 (18.5)
Will agree to perform mastectomy	305 (65.5)	30 (6.4)	131 (28.1)
Not bother at all	14 (3.0)	418 (89.7)	34 (7.3)
If you develop breast lump how fast you will go to see a doctor: Within one week	313 (76.2)	114 (24.5)	39 (8.4)
Within one month	129 (27.7)	302 (64.8)	35 (7.5)
Within 1-3 months	76 (16.3)	359 (77.0)	32 (6.7)
Not bother at all	14 (3.0)	418 (89.7)	34 (7.3)
Do you think breast cancer is a curable disease?	395 (84.8)	42 (9.0)	29 (6.2)
Do you think long time survival	154 (33.0)	278 (59.7)	43 (7.3)
Do you believe that breast cancer occurs more commonly in old women?	311 (66.7)	155 (33.3)	0.0 (0.0)

Table 5: Relation between level of knowledge for breast cancer risk factors and college year

College Year	Knowledge		95% Confidence Interval		Odds Ratio
	Good knowledge n (%)	Insufficient knowledge n (%)	Lower	Upper	
2nd year (n=129)	65(50.4)	64 (49.6)	1.249	3.402	2.061
3rd year (n=133)	90(67.7%)	43 (32.3)			
2nd year (n=129)	65 (50.4)	64 (49.6)	2.979	9.667	5.366
4th year (n=129)	109 (84.5)	20 (15.5)			
2nd year (n=129)	65 (50.4)	64 (49.6)	1.769	6.379	3.359
5th year (n=75)	58 (77.4)	17 (22.7)			

Table 6: Relation between level of knowledge of breast cancer risk factors and the health college

College	Knowledge		95% Confidence Interval		Odds Ratio
	Good knowledge n (%)	Insufficient knowledge n (%)	Lower	Upper	
Medicine (n=221)	169 (76.5)	52 (23.5)	0.318	0.957	0.552
Nursing (n=81)	52 (64.2)	29 (35.8)			
Medicine (n=221)	169 (76.5)	52 (23.5)	0.333	0.912	0.551
Dentist (n=106)	68 (64.2)	38 (35.8)			
Medicine (n=221)	169 (76.5)	52 (23.5)	0.222	0.744	0.406
Pharmacy (n=58)	33 (56.9)	25 (43.1)			

Table 7: Predictors of poor knowledge about risk factors for breast cancer among study group

Grade	B	P value	(AOR)	95% C.I.	
				Lower	Upper
Grade (year of the college)	1.134	0.000	3.109	2.075	4.657
Colleges					
College (1)	0.072	0.792	**1.075**	0.629	1.836
College (2)	-0.892	0.001	0.410	0.242	0.694
College (3)	-0.971	0.005	0.379	0.193	0.742
Attitude	-0.496	0.034	0.609	0.385	0.964
AOR: Adjusted Odds Ratio					

Table 7: Predictors of poor knowledge about risk factors for breast cancer among study group