NON COMMUNICABLE DISEASES

Attitude and Practices Towards Breast Cancer Among Undergraduate Female Pharmacy Students in Pakistan

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Keywords

Attitude • Breast Cancer • Practice • CBE • BSE

Summary

Background. *Lack of knowledge, attitude and perception towards breast cancer still a major public health issue disease in many developed and under-developed countries including Pakistan. In 2024 in Pakistan, one in every 8 females is affected by Breast Cancer.*
Objective. *To determine the awareness, attitude, and practices of Pharmacy (Pharm-D) students towards Breast Cancer (BC) and their correlation with participants' age and level of study.*
Methodology. *A cross-sectional study was conducted on 401 female students of Pharmacy from December 2023 to March 2024, using a self-administered questionnaire assessing awareness, attitude, and practices towards BC. For sample size calculation, Raosoft® online sample size calculator with a 5.0% margin of error and a 95.0% confidence interval was used. The respondents were sampled via convenience sampling.*
Results. *Our sample included 401 participants. The majority gained knowledge about BC from the media (69.8%). About 73.4% of participants did not participate in breast self-examination (BSE), and about 41.3% of them believed they were not at risk. About 92.6% of participants didn't undergo clinical breast examination (CBE). Nearly half of the participants (44.9%) agreed that BC is more common in older women. About four-fifths of the respondents (79.3%) agreed that regular examination can reduce the risk of BC.*
Conclusion. *The practice of BSE by the Pharm.D students is lagging. There were notable gaps in CBE by pharmacy students due to the belief that breast cancer predominantly affects older women. Therefore, it is important to make future pharmacists aware of practicing BSE and CBE regularly.*

Introduction

Malignant tumors or cancerous growths are the leading cause of mortality among women worldwide, with breast cancer (BC) as the primary cause. BC is uncontrolled growth of abnormal cells in the breast, leading to the formation of tumors [1]. The majority of BCs are histologically adenocarcinoma, with most classified as infiltrating duct carcinomas [2]. Both global and local data show that BC accounts for approximately one-third of all cancers among the female gender [3].

There are known risk factors of BC such as older age, lifestyle, family history, and smoking, however, these do not apply to every patient with breast cancer [4]**.** In addition, hereditary elements, such as changes or mutations in the BC susceptibility genes BRCA1 and BRCA2 may lead to the development of BC [5].

BC is a progressive disease, which can progress from a small lesion into a fatal disease, hence early detection and treatment lead to favorable outcomes, reducing its mortality and morbidity. The relatively higher survival rate of BC at a young age can justify the value of early disease diagnosis. However, poverty has been a dilemma in Pakistan, where government spending on healthcare is somewhat limited. Middle-income countries like Pakistan need awareness campaigns to prevent delays in the diagnosis of BC [6].

Screening for BC is effective because many patients remain asymptomatic until they reach an advanced stage. Screening methods include the detection of a palpable breast or axillary mass, pain, skin changes, nipple discharge, or asymmetric changes by breast self-examination (BSE) performed by the individual, clinical breast examination (CBE) performed by the healthcare provider, or by imaging using mammography or ultrasound [7].

Awareness of BC symptoms, screening methods, and risk factors can decrease mortality and morbidity. Studies conducted all over Pakistan showed that both educated and uneducated females suffer from a lack of the necessary knowledge, misperceptions, poor behaviors, and wrong beliefs about BC. Because BC programs and screening services differ widely among countries according to healthcare systems, health literacy, and socioeconomic characteristics, the results of attitude and practice studies are specific to each country or even region [8].

This study aimed to determine the awareness, attitudes and practices of female students (Pharm. D) regarding BC. We also investigated their correlation with participants' age and level of study.

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Material and Methods

Study design and Sample Size Calculation

A cross-sectional study was conducted among female university students studying Doctor of Pharmacy (Pharm. D) at Bahauddin Zakariya University, Multan, Pakistan to investigate their awareness, attitude, and practices toward BC. The study was conducted from December 2023 to March 2024. The ethical committee of the Department of Pharmacy Practice, Bahauddin Zakariya University, Multan, Pakistan approved this research. An anonymous self-administered questionnaire (printed) was distributed to the enrolled female pharmacy students of Bahauddin Zakariya University, Multan. For sample size calculation, we used the Raosoft® online sample size calculator [9] with a 5.0% margin of error and a 95.0% confidence interval. The minimum required sample size of (377) was increased to (401) for stronger and more reliable evident data. The respondents were sampled via convenience sampling.

Inclusion Criteria

Undergraduate female students studying Doctor of Pharmacy (Pharm-D) and aged between 18 to 28 years, at Bahauddin Zakariya University, Multan, Pakistan, (who provided consent to participate and were not under any sort of stress or influence that may cause any sort of change in their response towards questionnaire) were included in our study.

Exclusion Criteria

Female students who were not pharmacy undergraduates and not enrolled at Bahauddin Zakariya University, Multan, Pakistan were excluded from our study.

Data Collection Tool: Questionnaire

A self-administered questionnaire exploring awareness, attitude, and practices towards BC, was developed from a review of previous related journal articles and the draft was reviewed by two field experts, who are Pharmacy Practice lecturers. The questionnaire utilized a mixed-scale (combined-scale) methodology, incorporating various questions (nominal, ordinal, and Likert) to collect comprehensive information. The questionnaire consists of four sections, namely sociodemographic, knowledge, attitude and practice. The sociodemographic section included the participants' age, marital status, level of study, and family history of BC. The awareness section comprised of four questions, while the attitude and practice sections comprised of three questions each pertaining to BC.

A mixed-scale methodology was employed for this questionnaire, whereby nominal scales such as the dichotomous 'Yes' or 'No' options were utilized for factual items, while ordinal scales such as Likert scales were used in assessing attitude and perception-related questions. This approach was employed to comprehensively evaluate the participants' awareness, attitude, and practices related to BC. Simple English was used for the questionnaire to ensure it was comprehensible for the participants.

A pilot study was then conducted with 33 participants to assess the clarity (via face validation) and internal consistency (via Cronbach alpha). The participants provided positive feedback in terms of ease of comprehension and response difficulty. Only minor refinements were made to enhance the clarity. Cronbach's alpha was calculated at 0.727, indicating that the questionnaire had acceptable internal consistency and reliability, and was suitable for the main study.

Statistical Analysis

The required data was collected and entered IBM SPSS® Statistics for Windows (version 25.0 SPSS Inc. Chicago, IL, USA). Pearson's Chi-Square test was used for analysis. The p-value of <0.05 was considered statistically significant.

Result

Demographics of respondents

Our study included 401 female Pharm. D students within the age group of 18 to 28 years. In terms of the participants' marital status, most participants were unmarried (n = 392, 97.7%), aged between 18 to 21 years old (n = 335, 83.5%) and were studying in the 1st year of Pharm. -D (n = 98, 24.4%) (Tab. I).

Awareness of BC

Most of the participants (n=288, 71.8%) gained awareness about BC through the media. Nearly half of the participants (44.6%) agreed that BC is more common in older women. Regarding whether BC is a curable disease, about three-quarters of the participants (75.8%) believed it was curable, while the rest disagreed (11.7%) and some were unsure (12.5%) about it. When the participants were asked if they considered BC as a public health issue, 85.8% of them agreed. (Tab. II).

Attitude toward BC

About (92.6%) of participants had never had a breast examination by any doctor. About four-fifths of the respondents (79.3%) agreed that regular examination can reduce the risk of breast cancer. Interestingly, a

Tab. I. Participants' Demographics.

Variables	Categories	N (%)
Age	18-21 years	335 (83.5%)
	22-25 years	63 (15.7%)
	26-28 years	3 (0.7%)
Marital Status	Single	392 (97.7%)
	Married	9 (2.2%)
Study Year	1st	98 (24.4%)
	2nd	62 (15.5%)
	3rd	82 (20.5%)
	4th	80 (19.9%)
	5th	79 (19.7%)

Tab. II. Awareness of Breast Cancer among Pharmacy students.

Responses	Frequency N (n=401)	Percentage %
What is your main source of knowledge about BC?		
Media	288	71.8
From family member	52	13.0
From hospital	31	7.7
From a friend	26	6.4
No information	4	0.9
Do you believe that BC occurrence is common in old age?		
Agree	179	44.6
Disagree	140	34.9
Neutral	82	20.4
Do you think BC is a public health issue?		
Yes	344	85.8
No	34	8.5
Don't know	23	5.7
Do you perceive BC as a curable disease?		
Yes	304	75.8
No	47	11.7
Don't know	50	12.5

small proportion of the participants (5.2%) perceived themselves at a higher risk for developing BC, while nearly the same number of respondents believed they were not at risk (41.3%) or were unsure about it (40.8%) (Tab. III).

Practices towards BC

Majority of the participants in our study (74.3%) revealed that they did not take part in BSE while about a quarter of participants claimed to have practiced BSE. When asked about the reasons for not practicing BSE regularly, most of them think they do not have any problem (79.0%), while the rest do not think they should do so. When asked about reasons for not having done so, nearly 70% of the participants responded, "no need for it", 18.0% of them selected being "too young to participate", and only 5.2% selected "concern about extra time" (Tab. IV).

Correlation between Age with Respondent's Demographics and Breast Cancer Awareness

The findings for age vs. demographic factors (marital status and education) were the only statistically significant. Regarding age vs. the various aspects of awareness and practice towards BC, all pairs were found to be non-statistically significant with a p-value greater than 0.05 (Tab. V).

Discussion

The findings from our study indicated that most of the participants have heard about BC through the media

Tab. III. Attitude towards Breast Cancer Examination.

Responses	Frequency N (n = 401)	Percentage %
Would you see the doctor for any breast complaints?		
Agree	314	78.3
Disagree	71	17.7
Neutral	16	4.0
Do you think that regular examinations can reduce the occurrence of BC?		
Agree	318	79.3
Disagree	61	5.4
Neutral	22	15.2
Do you perceive yourself at risk for developing BC?		
Not at risk	165	41.2
Lower risk	52	12.9
Higher risk	21	5.2
Don't know	163	40.6

Tab. IV. Practices towards Breast Cancer.

Responses	Frequency N (n=401)	Percentage %
Do you practice BSE?		
Yes	103	25.8
No	298	74.3
What is the reason you don't practice BSE? BSE regularly?		
I don't have any problem	317	79.0
I don't think I should	84	21.0
Did you visit any doctor for clinical breast examination? pr(CBE)?		
Yes	15	7.4
No	386	92.6
If not, then why?		
No need for it	269	67.1
Too young to participate	72	18.0
Concern about extra money	26	6.5
Concern about extra time	21	5.2
Already did it	13	3.2

(78.1%), in line with a previous study [10]. Other sources of information about BC reported previously included the internet, BC campaigns, friends and relatives, and healthcare professionals [11]. This highlights that BC-related information is accessible through various sources, however, the accuracy and reliability of these sources may vary. This raises the need for evidence-based health educational resources to be disseminated via social media and other easily accessible platforms. The present study found that most of the participants (44.9%) agreed that BC is common among old-age

Tab. V. Comparison of age with demographics and attitude and practices towards breast cancer.

Section	Variable vs age factor	p-value
Sociodemographic	Age vs year of study	0.032*
	Age vs marital status	0.000*
Awareness	Age vs source of information about BC	0.529
	Age vs BC occurs more in older women	0.462
	Age vs is it a public health issue	0.286
	Age vs is BC is a curable disease	0.225
Attitude	Age vs preference to seek help from doctor	0.745
	Age vs regular examination of breast in females can reduce occurrence of such disease	0.674
	Age vs risk of developing BC	0.412
Practice	Age vs practice BSE	0.103
	Age vs not practicing BSE	0.051
	Age vs examination by doctor	0.732
	Age vs reasons for not getting examined by doctor	0.249

BC: breast cancer, BSE: breast self-examination. * p-value < 0.05.

females, similar to previous studies conducted in Saudi Arabia by Dandask KF et al [12]. Moreover, two-thirds of our participants perceived BC as a curable disease, aligning with a review by Hong and Xu. However, the stage at which BC is diagnosed plays a crucial role in its curability, emphasizing the need for timely screening. This highlights the importance of BC reporting and health campaigns in Pakistan. Half of the participants in a study carried out in Saudi Arabia were pessimistic about the curability of BC, while only 35.7% of women in an Indian survey considered it to be curable [13].

Most pharmacy students surveyed in this study (78.3%) reported they would visit a physician for any possible breast complaint. On the other hand, a higher percentage of Pakistani females (94.7%) reported they would see a physician in case of a breast mass and only 1.9% of them would go for homeopathy or other alternative medicine modalities. A very similar percentage (77.8%) was reported in a previous study in India where only 6.1% of them said they would seek traditional healers instead [14]. This implies that the participants demonstrate a strong level of trust in healthcare professionals and evidence-based medicine when it comes to medical matters.

About 79.3% of participants thought that regular examination can reduce the occurrence of BC, in line with a previous study conducted in most of the participants reported that early diagnosis promotes early treatment (79.0%) and decreases mortality rates (77.5%) [15]. A survey in Gaza showed that women there believe that early detection of BC increases survival [16]. Such consistent trends across different populations show a generally positive perspective on timely screening and its role in minimizing BC-related burden.

Most of our participants (79.3%) believed that regular examinations could reduce the chances of developing BC. This implies that most women in this study perceived that deaths and sufferings caused by BC are preventable through awareness and timely detection. Specially designed educational material on the early warning signs of BC and BC screening can be used to improve their awareness and attitudes, which in turn could encourage more females participating in regular BSE.

A lot of our participants (41.2%) felt that they were not at risk of developing BC. Family history of BC was found to significantly increase the level of BC awareness and performing BSE and CBE. Since BC diagnosed at a later stage possibly due to lack of awareness, may lead to a poorer prognosis, educational programs should be tailored according to age, healthcare access, socioeconomic status, and health literacy of the target population. Increasing awareness and promoting appropriate behaviors related to BC can help reduce the stage of malignancy upon presentation, improve the quality of life, and increase survival.

Most of the participants do not practice BSE regularly because they think they do not have any problems (79.0%), which is in contrast to the findings of a two-center study conducted in Pakistan and the United Kingdom [17]. Only 25.8% the female Pharm. D students reported practicing BSE, close to the rate of females performing BSE reported previously in another study in Pakistan (21.8%) [18]. In contrast, other surveys in Pakistan [19] and Iraq [20]18 (4 revealed a higher percentage with 46.0% and 48.3% of females performing BSE, respectively. Similarly, a cross-sectional study conducted in two universities in Iraq found that 90.9% of participants had heard about BSE, and 48.3% practiced it [21]. A study in India reported a lower rate of practicing BSE (12.1%) [22]. Another study in Iran reported that 12.9% of females reported practicing BSE regularly, while 50.6% of them reported an occasional practice [23]. Because BSE is a simple, non-invasive practice that takes only a few minutes, can be performed by females at home, and does not require a visit to the clinic, it is a good screening choice for developing countries, including Pakistan. Since BSE is a free screening method, it is suitable to be performed by all Pakistani females including those in the low-income households. These individuals represent nearly 37.0% of the population who live below the poverty line and those who are at risk of poverty (52.0%) [24]. This highlights the need for targeted interventional programs to bridge the gap in BSE practices among women of lower socioeconomic groups.

Only 7.4% of our respondents reported they had CBE. Slightly higher rates of CBE (12.7-14.0%) were reported in previous studies in Pakistan [25]. On the other hand, a much higher percentage of women reported going for CBE in Iran (44.3%) [26] and UAE (49.4%) [27]. This disparity may be due to the difference in healthcare systems among different countries.

Interestingly, Iran's healthcare system has shown notable progress through initiatives such as IraPEN. It is a localized adaptation of WHO's Package of Essential Non-Communicable Disease Interventions, which has strengthened early detection, including BC screening [28] [29]. Contrastingly, Pakistan's healthcare system has yet to have such a system and also faces challenges such as limited public health funding [30].

The much higher rate of CBE among women in Iran and UAE may stem from greater awareness of BC risks, stronger health education initiatives, and better access to CBE services. In contrast, the lower rates observed in the present study may be influenced by their younger age. This gap could be tackled by incorporating relevant health information on CBE into their academic curriculum.

Reasons for not going for CBE in our study were reporting "no need for it" (67.1% of participants), thinking they are "too young to participate" (18.0% of the participants), and concerns about either money (6.5%) or time (5.2%). Although numerous studies have explored BC awareness, attitude, and practices, those were mainly conducted on general populations and in diverse settings. The present findings focused on a specific demographic, the female Pharm. D students, who are future healthcare professionals. These baseline insights can assist in assessing their understanding regarding BC and its screening practices, which would help in the development of educational interventions and public health strategies in ensuring they are well prepared to educate patients and the public regarding BC and the importance of early screening.

Conclusion

This study highlights that participants have a general awareness regarding BC and a good attitude towards the same. However, the practice of BSE by these students is lagging. We identified notable gaps in CBE by Pharm. D students due to the belief that BC predominantly affects older women, and they do not need it at present. Therefore, it is necessary to make future pharmacists aware of the importance of regular BSE and CBE practices. Researchers and policymakers should focus on enhancing educational efforts about BC in universities, which could potentially help reduce its incidence in Pakistan and globally.

Limitations

There are a few limitations in our study. Firstly, given that it is a cross-sectional study, the temporal relationship between variables cannot be ensured. Secondly, we only recruited participants from Multan, specifically, female Pharm. D students enrolled at Bahauddin Zakariya University. This limits the study's external validity to all female Pharm. D students. We also used convenience sampling for recruiting participants, which may have added some bias to our findings.

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Conflict of Interest statement

The authors declare no conflict of interest.

Authors' contributions

NQ: Conceptualization, investigation, and writing the original draft. AUS: Data curation, formal analysis, and software. RA: Writing review and editing. HAMM: revised the manuscript

References

[1] Sasada Y, Kimura N, Masumoto A, Emi T, Kadoya K, Arihiro M. Okada, Breast cancer detection by dedicated breast positron emission tomography according to the World Health Organization classification of breast tumors, Eur J Surg Oncol 2021;47:1588-92. https://doi.org/10.1016/j.ejso.2021.02.026.

[2] Kelsey JL, Horn-Ross PL. Breast cancer: magnitude of the problem and descriptive epidemiology. Epidemiol Rev 1993;15:7-16. https://doi.org/ 10.1093/oxfordjournals.epirev.a036118.

[3] Sohail S, Alam SN. Alam, Breast cancer in Pakistan-awareness and early detection. (2007). Available at: https://ecommons.aku.edu/cgi/viewcontent.cgi?article=1449&context=pakistan_fhs_mc_radiol (Accessed on: 28/05/2024).

[4] Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world. Breast Cancer (Dove Med Press) 2019;11:151-64. https://doi.org/10.2147/BCTT.S176070.

[5] Angahar LT. An overview of breast cancer epidemiology, risk factors, pathophysiology, and cancer risks reduction. MOJBM 2017;1:92-6. https://doi.org/10.15406/mojbm.2017.01.00019.

[6] Soomro R, Faridi S, Khurshaidi N, Zahid N, Mamshad I. Age and stage of breast cancer in Pakistan: an experience at a tertiary care center, J Pak Med Assoc 2018;68:1682-5. Available at: https://www.academia.edu/download/88164999/8958.pdf (Accessed on: 28/05/2024).

[7] Khalid A, Hassnain S, H. Gakhar H, B. Khalid B, F. Zulfiqar F, Wahaj A, Breast cancer among young girls: a KAP study conducted in Lahore. Int J Sci Rep 2018;4:166-71. http://dx.doi.org/10.18203.

[8] Liu S, Zheng S, Qin M, Xie Y, Yang K, Liu X. Knowledge, attitude, and practice toward ultrasound screening for breast cancer among women, Frontiers in Public Health 2024;12:1309797. https://doi.org/10.3389/fpubh.2024.1309797.

[9] Jamous RM, Sweileh WM, El-Deen Abu Taha AS, Zyoud SH. Beliefs About Medicines and Self-reported Adherence Among Patients with Chronic Illness: a Study in Palestine. J Family Med Prim Care 2014;3:224-9. https://doi.org/10.4103/2249-4863.141615.

[10] Giuliano AE, Edge SB, Hortobagyi GN. Eighth Edition of the AJCC Cancer Staging Manual: Breast Cancer. Ann Surg Oncol 2018;25:1783-5. https://doi.org/10.1245/s10434-018-6486-6.

[11] Zafar N, Wolf AB, Kepniss JL, Teal AC, Brem RF. Effectiveness of Community Education for Breast Cancer Screening. J Breast Imaging 2024;6:166-74. https://doi.org/10.1093/jbi/wbae002.

[12] Dandash KF, Al-Mohaimeed A. Knowledge, attitudes, and practices surrounding breast cancer and screening in female teachers of buraidah, saudi arabia. Int J Health Sci (Qassim) 2007;1:61-71.

[13] Alshahrani M, Alhammam SYM, Al Munyif HAS, Alwadei AMA, Alwadei AMA, Alzamanan SSM, Aljohani NSM. Knowledge, Attitudes, and Practices of Breast Cancer Screening Methods Among Female Patients in Primary Healthcare Centers in Najran, Saudi Arabia. J Cancer Educ 2019;34:1167-72. https://doi.org/10.1007/s13187-018-1423-8.

[14] Nimbannavar SM, Mane VP, Breast cancer: knowledge, attitude and practices among undergraduate female students at a government college in Koppal, Karnataka. Int J Community Med Public Health 2019;6:2944-9. http://dx.doi.org/10.18203/2394-6040.

[15] Ahmed S, Pulock O, Chakraborty R, Awal A. Breast Cancer Screening: Knowledge, Attitude and Practice Among Female Doctors and Medical Students in a Tertiary Care Hospital and Medical College in Bangladesh. RMCJ 2020;3:11-6. http://dx.doi.org/10.3329/jcmcta.v31i1.66741.

[16] Alduraidi H, Tarazi A, Theeb L, AlKasaji M. Knowledge, Attitudes, and Practices Toward Breast Cancer and Breast Cancer Screening Among Arab Females in the Middle East: a Literature Review. Public Health Nursing 2025;42:579-88. https://doi.org/10.1111/phn.13447.

[17] Khan NH, Duan SF, Wu DD, Ji XY, Better reporting and awareness campaigns needed for breast cancer in Pakistani women. Cancer Manag Res 2021;13:2125-9. http://doi.org/10.2147/CMAR.S270671.

[18] Bhandari PM, Thapa K, Dhakal S, Bhochhibhoya S, Deuja R, Acharya P, Mishra SR. Breast cancer literacy among higher secondary students: results from a cross-sectional study in Western Nepal. BMC Cancer 2016;16:1-9. https://doi.org/10.1186/s12885-016-2166-8.

[19] Khokher S, Qureshi MU, Fatima W, Mahmood S, Saleem A, Impact of a breast health awareness activity on the knowledge level of the participants and its association with socio-demographic features. Asian Pac J Cancer Prev 2015;16:5817-22. https://doi.org/10.7314/APJCP.2015.16.14.5817.

[20] Alwan N, Al Attar W, Eliessa R, Madfaic Z, Tawfeeq F. Knowledge, attitude and practice regarding breast cancer and breast self-examination among a sample of the educated population in Iraq. East Mediterr Health J 2012;18:337-45. https://doi.org/10.26719/2012.18.4.337.

[21] Sachdeva S, Mangalesh S, Dudani S. Knowledge, attitude and practices of breast self-examination amongst Indian women: a pan-India study. Asian Pac J Cancer Care 2021;6:141-7. https://doi.org/10.31557/apjcc.2021.6.2.141-147.

[22] Jadhav BN, Abdul Azeez E, Mathew M, Senthil Kumar A, Snegha N, Yuvashree G, Mangalagowri S. Knowledge, attitude, and practice of breast self-examination is associated with general self-care and cultural factors: a study from Tamil Nadu, India. BMC Women's Health 2024;24:151. https://doi.org/10.1186/s12905-024-02981-9.

[23] Nafissi N, Saghafinia M, Motamedi MHK, Akbari ME. A survey of breast cancer knowledge and attitude in Iranian women. J Cancer Res Ther 2012;8:46-9. https://doi.org/10.4103/0973-1482.95173.

[24] Jamal H. Updating Pakistan's Poverty Numbers for the Year 2019 (5 January 2021). Available at: https://mpra.ub.uni-muenchen.de/105135/ (Accessed on: 01/07/2024).

[25] Basra MAR, Saher M, Athar MM, Raza MH. Breast cancer in Pakistan a critical appraisal of the situation regarding female health and where the nation stands. Asian Pac J Cancer Prev 2016;17:3035-41.

[26] Seyedkanani E, Hosseinzadeh M, Mirghafourvand M, Sheikhnezhad L. Breast cancer screening patterns and associated factors in Iranian women over 40 years, Scientific Reports 2024;14:15274. https://doi.org/https://doi.org/10.1038/s41598-024-66342-0.

[27] Rabbani SA, Al Marzooqi AMSK, Srouji AEM, Hamad EA, Mahtab A. Impact of community-based educational intervention on breast cancer and its screening awareness among Arab women in the United Arab Emirates. Clin Epidemiol Glob Health 2019;7:600-5. https://doi.org/10.1016/j.cegh.2019.01.008.

[28] Farzadfar F, Naghavi M, Sepanlou SG, Moghaddam SS, Dangel WJ, Weaver ND, A. Aminorroaya A, Azadnajafabad S, Koolaji S, Mohammadi E Health system performance in Iran: a systematic analysis for the Global Burden of Disease Study 2019. Lancet 2022;399:1625-45. https://doi.org/https://doi.org/10.1016/.

[29] Rahimi F, Tolouei S, Ravankhah Z, Mohammadi-Sefiddashti F. Evaluating the Impact of a Clinical Breast Examination Screening Program within the IraPEN Project. Asian Pac J Cancer Prev 2024;25:3151-7. https://doi.org/10.31557/APJCP.2024.25.9.3151.

[30] Baig A, Rahat T. Addressing the challenges faced by Pakistan's healthcare system. Pak J Med Res 2024;63:115-6.

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