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Breast Cancer Awareness and Attitudes Toward Breast Self-Examination among Young Females: The Gharyan Experience and the Need for Review

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ABSTRACT

Global research continues to reveal a critical gap in breast cancer (BC) awareness. This study was conducted in 2013 during educational activities in the Gharyan governorate of Libya as a cross-sectional survey. It assessed BC and breast self-examination (BSE) awareness, BSE practice, and attitudes toward BSE among school and collegiate female students and teachers. A total of 1,027 participants were targeted, and the findings showed 97.4% awareness of BC, 42.3% awareness of BSE, 13.4% practice of BSE, and only 3.2% regular practice of BSE. Among those aware of BC, 97.7% expressed interest in learning more, 94.2% demonstrated willingness to acquire proficiency in BSE, 88.0% showed willingness to educate others about BSE, and 85.9% expressed willingness to participate in BC awareness activities. The first three attitudes appeared to be driven primarily by BC awareness. However, education and awareness of BSE were identified as independent predictors of willingness to learn and become proficient in BSE practice. Employment status was an independent predictor of positive attitudes toward educating others, while having a family member affected by BC was an independent predictor of willingness to participate in awareness taskforces. Selective targeting of these proactive groups in future initiatives may enhance program effectiveness and optimize resource utilization.

Introduction

Universally, breast cancer (BC) is the most commonly diagnosed malignancy, and recently, its incidence has been rapidly growing, particularly in developing countries. The number of deaths due to breast cancer continues to represent a large share of the global number of cancer deaths [1].

Noticeably higher death rates attributed to breast cancer are significantly present among women younger than 40 years of age. This increase in mortality rate is mainly owed to the destructive nature and complex biological features of the disease in this age group. Therefore, early detection and treatment are vital, and adjuvant therapy is strongly recommended [2–4]. Five main categories of risk factors were identified in the guidelines: personal or family history of breast cancer or premalignant lesions in the breast, the known genetic tendency of BC, exposure to chest or mantle radiation, and breasts with dense tissue. 5

In respect of primary prevention, there are a few established modifiable risk factors for breast cancer, specifically, weight reduction, reducing alcohol consumption, increasing physical exercise, and breastfeeding. This is why the emphasis of breast cancer control has been aiming for early detection /screening and timely, comprehensive cancer management [6].

Nowadays, many screening tools can detect breast cancer at early stages. Most guidelines state recommendations for annual or two-year screening with mammographic examination above age 40 for those women at average-risk and yearly screening with mammography or MRI starting from less than 40 for high-risk groups. However, there is a lack of evidence-based guidelines tailored to low- and middle-income countries considering the different economic capacities [5]. Although Mammography is the most sensitive available tool for early detection of breast cancer, both clinical breast examination (CBE) and breast self-examination (BSE) have the advantage of being inexpensive, simple, and do not require any specialized equipment, consequently proving their usefulness in low-income countries, which lack resources.

BSE is known as a good tool for early detection of BC. However, many problems attenuate the feasibility of this tool; most importantly, weak awareness about the condition and its risk factors, lack of time, lack of self-confidence, fear of possible detection of a mass, doubt about the usefulness, adverse socio-cultural Beliefs about breast cancer, and preferring traditional treatment, and lack of encouraging tips from family or friends. Subsequently, even with it being inexpensive, simple, and quick, the BSE practice rate remains very low [7].

Global research still reveals a critical gap in BC awareness; while general awareness of the disease reaches 84% worldwide, specific knowledge of symptoms and risk factors drops to 51% and 40%,

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respectively. In regions like Sudan and China, awareness is even lower, with 55.06% of women failing to identify a single sign of the malignancy [8].

Despite findings that environmental factors and lifestyle choices—such as high-fat diets and physical inactivity contribute substantially to 90-95% of breast cancer cases, participation in screening remains unsatisfactorily low. In Indonesia, unmarried women were 1.56 times more likely to face high perceived barriers to care, highlighting socio-demographic challenges. Ultimately, the integration of primary prevention through behavior modification and secondary prevention programs seems necessary for reducing mortality. Transforming breast cancer from a global dilemma into a manageable priority requires closing this awareness gap and improving screening rates among at-risk populations [8].

This study seeks to explore the knowledge, attitudes, and practices related to breast self-examination (BSE) among young women living in the Western Mountain area of Libya. By examining how these women understand and engage with BSE, the research aims to shed light on both their awareness and their behavioral patterns. Furthermore, the study endeavors to analyze the various factors that may influence levels of knowledge and the development of positive attitudes toward BSE, thereby identifying the elements that contribute to or hinder effective self-care practices in this context.

Methods

A cross-sectional survey included a random multistage sample of 1027 students and teachers in the Western Mountain area (Gharyan governorate) in Libya during the year 2013. Data were extracted as a part of a mass health education project included within the Breast cancer awareness taskforce targeted 66 schools in four districts, as well as 6 university colleges. The program included a pre-session questionnaire, educational lectures, presentations, and lectures (75 minutes in total) and post-session questionnaire. The current results are extracted from data of the pre-session questionnaire that was designed to assess the previous knowledge, practice, and attitude level. The survey included 24 main items documenting the basic demographic characteristics, questions regarding knowledge, questions regarding practice, and knowledge regarding attitudes toward breast self-examination (BSE).

Analysis of data was accomplished using Statistical Package for Social Science (SPSS) version 27.0. Four attitude measures were examined: interest to know, will to learn, will to educate, and will to participate in awareness activities. Monovariate analysis was only applied to compare the four selected attitude questions with any knowledge of BSE. Multivariate analysis was done with binary logistic regression to evaluate how demographic factors: age (adult versus teenager), education (beyond secondary or limited within secondary or below), and working status (working or not working); presence of a family member, affected; any knowledge of the disease, and any knowledge of the BSE predict the described four attitude measures. Results were considered significant once p is found equal to 0.05 or less. Adjusted odds ratios were calculated.

Results and Discussion

The demographic factors and history of the affected relative are summarized in Table 1. The majority of participants were adults (≥ 18 years), only a minor percent were not Libyans, approximately 20% were educated beyond secondary level, the working women were 15.5% of the study population, and a percent of 7.5% had a family history of up-to fourth degree relatives with breast cancer (BC).

Table 1. Participants' characteristics

Characteristic	Category	n/ 1024	%
Age group	< 18 years	741	72.2%
	18 - 25 years	135	13.1%
	26 - 30 years	35	3.4%
	31 - 35 years	37	3.6%
	36 - 40 years	40	3.9%
	41 - 45 years	20	1.9%
	46 - 50 years	14	1.4%
	> 50 years	5	0.5%
Nationality	Libyan	1013	98.6%
	Other	14	1.4%
Education	Illiterate	4	0.4%
	Below secondary	262	25.5%
	Secondary	547	53.3%
	Beyond secondary	214	20.8%

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Working status	Housewife	12	1.2%
	Working	159	15.5%
	Student	856	83.3%
Any family member affected?	Has a family member affected	75	7.3%
	No affected family member	952	92.7%

The distribution of perceived level of knowledge about BC among study participants and the distribution of any knowledge about BC and/ or Breast Self-Examination (BSE) among study participants are depicted in figures 1&2. In both figures, we can see a 2.6% percent without any previous knowledge of BC nor BSE, while 3.7% claimed an excellent knowledge level, and as large as 55.1% proportion reported previous knowledge for BC but not for BSE. See figures (1) and (2).

A percent of only 3.2% claimed regular BSE practice, see figure (3). The distribution of non-practice causes among the study population subset that do not practice Breast Self-Examination (BSE) despite previous knowledge of it (401 participants) is shown in Figure 4. A significant proportion (32.7%) justified this with insufficient knowledge and skill, while 33.7% reported psychological fears like lack of confidence or fear of the disease itself. The rest reported unclear causes or didn't report. Comparing our data to that related to global general awareness of the disease (84%) and developing world figures (55.06%), the Libyan figure among young people seems promising (Kolak A et al 2017) [8]. Nevertheless, in relation to a cross-sectional study that evaluated breast cancer awareness among 241 female students at the University of Sharjah, which indicated that 99% had heard of the disease and 68.5% were aware of BSE, the present study results may reflect an unsatisfactory level of BSE awareness (Rahman SA et al 2019) [9].

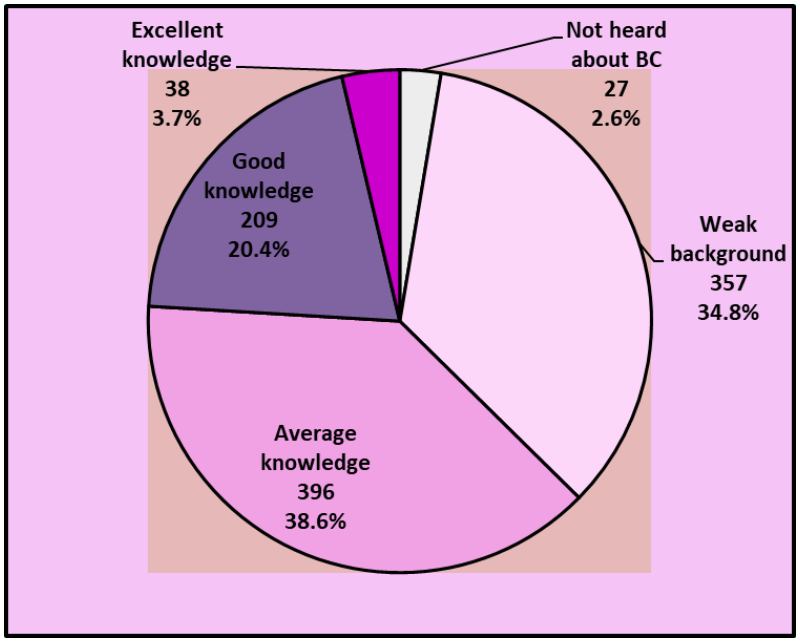

Figure 1. Distribution of perceived level of knowledge about Breast Cancer (BC) among study participants.

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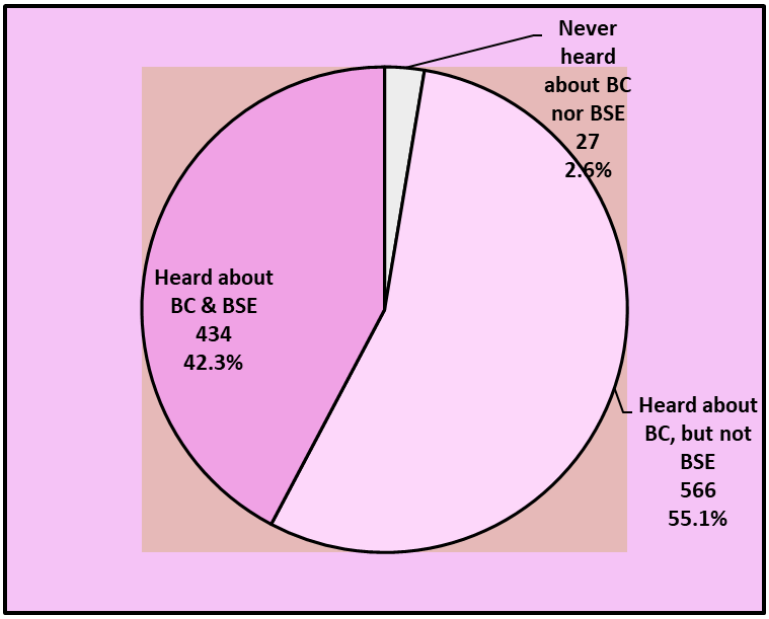

Figure 2. Distribution of any- knowledge about Breast Cancer (BC) and/ or Breast Self-Examination (BSE) among study participants.

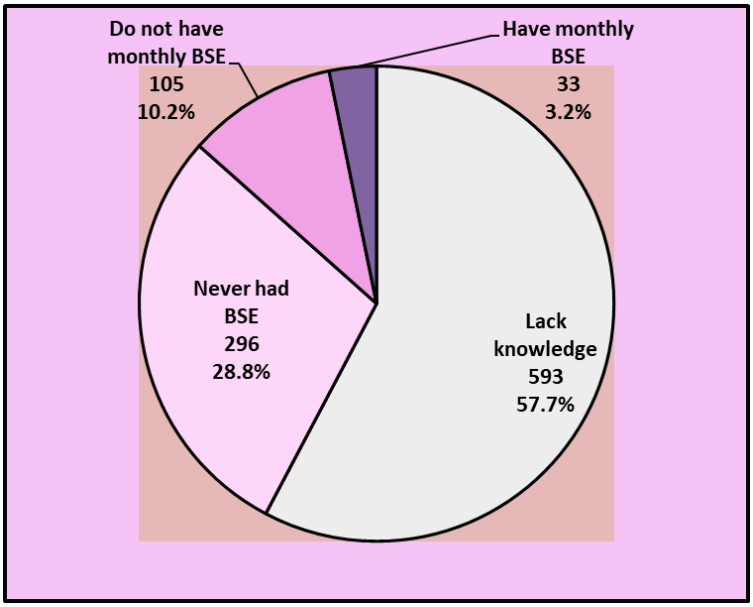

Figure 3. Distribution of practice patterns of Breast Self-Examination (BSE) among study participants.

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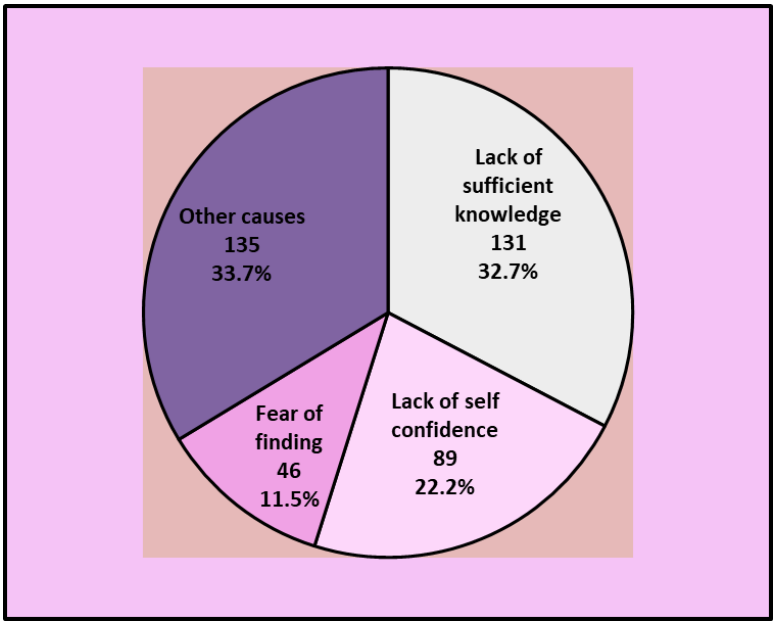

Figure 4. Distribution of non-practice causes among the study population subset that do not practice Breast Self-Examination (BSE).

The attitudes toward BSE show a significant association with having previous knowledge, but not with the will to participate in awareness activities. However, the overall rates of positive attitudes were high, statistically significantly higher rates were detected for those with previous knowledge regarding interest to know, will to learn, and will to educate about BSE. See table (2).

Table 2. Differences in examined attitude patterns toward BSE according to the status of any knowledge in this regard.

Attitude	Heard about BSE? (Q13) [BSE any-knowledge status]		Chi-square (*p*)
	YES	NO	
	n/434 (%)	n/593 (%)	
Interested to know? (Q8)	424 (97.7%)	563 (94.9%)	5.08 (0.024)*
Will to know and get proficient in BSE? (Q14)	409 (94.2%)	520 (87.7%)	12.46 (<0.001)*
Will to educate BSE if it got proficient? (Q15)	382 (88.0%)	493 (83.1%)	4.74 (0.030)*
Will you participate in BC awareness activities? (Q20)	373 (85.9%)	506 (85.3%)	0.08 (0.781)

*BSE: Breast Self-Examination. BC: Breast Cancer. n: number of attitude responders within BSE any-knowledge status. * Statistically significant difference at level of confidence of 95%*

The analysis for multiple factors' independence in predicting the four attitudes' responses among participants shows that higher education than secondary level independently may predicts the attitude of will to learn and get proficient in the practice of BSE, despite significance was marginal; adjusted odds ratio (AOR) 2.508; 95% confidence interval (CI): 0.995 - 6.32, $p = 0.051$. However, it's more clearly seen that the status of working woman predicts the response "will to educate others" and having a relative with BC predicts will to participate in educational activities (AOR: 2.596; CI: 1.18 - 5.713 and AOR: 3.125; CI: 1.121 - 8.713, respectively). On the other hand, the status of having heard about BSE (any knowledge) inversely predicts the attitude of will to know and get proficient in BSE (AOR: 0.528; CI: 0.324 - 0.861). The results may reflect the importance and need for more educational and awareness programs focusing on young women regarding BC prevention. See table (3)

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Table 3. Multivariate analysis of predictors for the key attitudes analyzed.

Characteristic	The key analyzed attitudes towards BSE Adjusted odds ratio (95% confidence interval); Beta coefficient [*P* value]			
	Interested to know	**Will to know and get proficient**	**Will to educate**	**Will to participate in awareness activities**
Adult	1.387 (0.301 - 6.379); B = 0.327 [*p* = 0.675]	0.612 (0.282 - 1.33); B = - 0.49 [*p* = 0.216]	0.696 (0.361 - 1.341); B = - 0.362 [*p* = 0.279]	0.868 (0.449 - 1.679); B = - 0.141 [*p* = 0.674]
Beyond secondary	5.044 (0.504 - 50.46); B = 0.618 [*p* = 0.168]	2.508 (0.995 - 6.32); B = 0.919 [*p* = 0.051] †	1.877 (0.907 - 3.884); B = 0.629 [*p* = 0.09]	0.774 (0.413 - 1.448); B = - 0.257 [*p* = 0.422]
Working	2.398 (0.238 - 24.199); B = 0.875 [*p* = 0.458]	2.372 (0.87 - 6.467); B = 0.864 [*p* = 0.091]	2.596 (1.18 - 5.713); B = 1.954 [*p* = 0.018] *	0.831 (0.458 - 1.509); B = - 0.185 [*p* = 0.543]
Family member affected?	1.38 (0.323 - 5.895); B = 0.322 [*p* = 0.664]	2.4 (0.736 - 7.823); B = 0.875 [*p* = 0.147]	1.652 (0.74 - 3.691); B = 0.502 [*p* = 0.221]	3.125 (1.121 - 8.713); B = 1.139 [*p* = 0.029] *
Heard about BC?	0.738 (0.165 - 3.297); B = - 0.304 [*p* = 0.691]	0.503 (0.195 - 1.299); B = - 0.687 [*p* = 0.156]	0.604 (0.247 - 1.476); B = - 0.504 [*p* = 0.269]	0.574 (0.224 - 1.475); B = - 0.554 [*p* = 0.249]
Heard about BSE? (Q 13)	0.585 (0.279 - 1.227); B = - 0.536 [*p* = 0.156]	0.528 (0.324 - 0.861); B = - 0.638 [*p* = 0.01]*	0.794 (0.546 - 1.156); B = - 0.23 [*p* = 0.23]	0.899 (0.619 - 1.306); B = - 0.107 [*p* = 0.576]
INTERCEPT	B = 3.298 (*p* <0.001)	B = 2.538 (*p* <0.001)	B = 1.755 (*p* <0.001)	B = 6.958 (*p* <0.001)

*BSE: Breast Self-Examination. BC: Breast Cancer. B: Beta coefficient of regression. * Statistically significant independent predictor at a level of confidence of 95%. † Marginally significant independent predictor at a level of confidence of 95%.*

Conclusion

This study, conducted in 2013, highlights a significant disparity between general awareness and proactive health behavior. While awareness of breast cancer (BC) was nearly universal at 97.4%, knowledge of breast self-examination (BSE) was substantially lower (42.3%), and regular practice was alarmingly rare at only 3.2%. Despite these gaps, the findings reveal a profound readiness for change: over 94% of women expressed a sincere desire to master BSE, and more than 85% were willing to serve as educators and advocates within their communities. The data suggest that while general BC awareness sparks interest, true empowerment—the transition from knowing to doing—is driven by targeted education. Furthermore, personal experiences, such as having an affected family member, act as powerful catalysts for community volunteerism. By identifying and supporting these "proactive groups," future health programs can maximize their impact and optimize resources. These results serve as a vital baseline for Libya; however, there is an urgent need to update this data to capture how modern awareness and community attitudes have evolved over the last decade, ensuring that no woman is left behind in the fight against breast cancer.

Conflict of interest. Nil

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