Original Research Article

Breast Self-Examination: Knowledge, Practice, and Beliefs Among Females in Jordan

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Abstract

Introduction: Worldwide, breast cancer is one of the most common types of cancer. It is the leading cause of cancer-related deaths among females in Jordan.

Objective(s): The current study aimed to evaluate breast cancer knowledge levels and practice and assess health beliefs regarding the model supporting self-breast examination (BSE) in a group of females aged between 20 and 60 in Jordan.

Methods: Descriptive, cross-sectional, correlational design was used; Two hundred females participated in the study, employing convenient sampling. The adjusted version of the Champion's Health Belief Model Scale (CHBMS) was utilized to collect the data.

Results: Most participants were married (F = 128, 64%), and the mean of the participants' age was (36.18, *SD* = 10.87). About 73 participants (36.5%) don't practice BSE; however, 53 participants (26.5%) plan to practice BSE in the future monthly. The logistic regression model showed that the impact of confidence as positive predictive value on practicing BSE in the last year ($B = 0.141$, $p < .001$) and this year ($B = 0.130$, $p < .001$) was statistically significant.

Conclusion: Implications for practice include identifying culturally specific barriers and improving health education programs to trigger breast self-examination utilization.

Keywords

breast self-examination, breast cancer, knowledge, beliefs, practice

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Introduction/Background

Breast cancer is a critical illness in developing and developed countries. It is the primary type of cancer among females, and the risk rises with age (Francies et al., 2020). Specific hereditary genetic mutations, a personal and family history of breast cancer, and biopsy-confirmed hyperplasia are the main reasons that raise the risk of breast cancer in females (Feng et al., 2018). Other reasons that would contribute to breast cancer are menstrual history (menstrual cycles begin early or stopped late in life), obesity next to menopause, current use of oral contraceptives, postmenopausal hormone treatment, having the first baby after the age of 30 years, or never had babies, ethnicity features, exposure to radiation, or drinking of alcoholic drinks daily (Olsson & Olsson, 2020).

In 2020, it was estimated that the worldwide cancer rate has increased to 19.3 million new cases and 10 million deaths (International Agency for Research on Cancer, 2021). The top three cancer types are lung, colorectal, and female breast cancers in terms of incidence. They are among the top five (first, second, and fifth, respectively) in terms of mortality. Together, these three cancer types are responsible for one-third of all cancer incidence and mortality worldwide. (World Health Organization, 2018). In Jordan, breast cancer is estimated for 19.7% of total cancer

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cases diagnosed in 2018 (The Global Cancer Observatory, 2020).

Globally, breast cancer prevalence rates in women significantly outweigh those for other cancers. Moreover, the most frequently diagnosed cancer in women is breast cancer (24.2%), and in 154 of the 185 countries, breast cancer is the most prevalent. The leading cause of cancer mortality in females (15%) is still breast cancer (World Health Organization, 2018). An early breast cancer diagnosis will guide to a better prognosis, and early discovery of breast cancer aims to enhance the treatment's outcome.

Review of Literature

Breast self-examination (BSE) is considered the cornerstone testing method for breast cancer screening and early detection (O'Donovan et al., 2020; World Health Organization, 2016). The Health Belief Model (HBM) is one of the frameworks for investigating health-related issues to accommodate behavioral health ideas. In the 1950s, a team of psychologists proposed this model to support the reasoning for whether women would or would not utilize preventive health care, such as cancer screening and influenza immunizations (Janz & Becker, 1984; Rosenstock, 1974). The HBM has been used as an analytical tool to study breast cancer screening practices such as BSE or mammography screening and attitudes relevant to cancer screening procedures (Dewi et al., 2019; Kirag & Klzllkaya, 2019).

While several organizations such as the American Cancer Society (American Cancer Society, 2019) and World Health Organization (Khatib & Modjtabai, 2006) do not endorse BSE as an effective screening measure for breast cancer diagnosis, it can raise awareness of breast cancer and warn females and doctors of the need to conduct more effective screening measures, particularly females with a family history of breast cancer. Screening preventive procedures for breast cancer, including BSE, clinical breast examination (CBE), and mammography are the primary measures for discovering breast cancer (Shah & Guraya, 2017). Despite the worldwide guideline for conducting breast cancer screening measures, routine practice is still low (Hajian-Tilaki & Auladi, 2014). It was also found that adherence to BSE, mammography, and CBE is comparatively poor in Turkey (Yilmaz & Durmus, 2016). Another study in Saudi Arabia showed that 7.8% only practiced BSE regularly. Moreover, health beliefs may impact women's behavior in practicing BSE (Gonzales et al., 2018). Other studies were conducted among female students in Jordan; these studies showed that the awareness of breast cancer and practice of BSE are inadequate, and they must be encouraged to practice BSE regularly (Al-Mousa et al., 2020; Al Odwan et al., 2016; Alsaraireh & Darawad, 2018; Suleiman, 2014).

Health beliefs strongly impact compliance with screening methods for breast cancer. The HBM is accepted internationally as a psychological model capable of predicting and optimizing prevention and health screening actions (Ogden, 2012). This model also offers a valuable context for interpreting health actions and has been widely used for breast screening (Champion, 1993). Several studies have assessed the awareness, attitudes, and knowledge level of the effect of health beliefs on BSE (Abolfotouh et al., 2015; Akhtari-Zavare et al., 2015; Yilmaz & Durmus, 2016).

The HBM was used in a study conducted in Saudi Arabia to evaluate BSE practice's knowledge level and attitudes. The knowledge level about breast cancer was marginal, with pessimistic views towards BSE and less than a quarter of Saudi Arabia women practicing BSE daily (Abolfotouh et al., 2015). Another research was carried out in Turkey to assess health beliefs on BSE practice of a group of health care professional women. More than 93% of females don't perform CBE and mammography annually, and less than 43% practice BSE (Yilmaz & Durmus, 2016).

The current study aimed to evaluate the level of knowledge and practice about breast cancer and assess the effect of health-related behaviors on BSE in a group of females aged 20–60 in Jordan. Moreover, to identify the relationship between health beliefs (Perceived susceptibility, barriers, seriousness, confidence, benefits, and health motivation) with the frequency of BSE among Jordanian women.

Methods

Design

Quantitative, cross-sectional, and correlational designs were utilized. A correlational study is an efficient and effective approach for obtaining large quantities of data about special phenomena (Polit & Beck, 2016).

Sample

The data were collected between June 2019 and December 2020 in Amman, Jordan. A convenience sample of 200 females aged between 20 and 60 living in Jordan participated in the study. The sample size was calculated with a 95% confidence level, 0.5 prevalence, and 0.05 margin of error using the Epi-info 2000 statistical software.

Instrument

The health beliefs model scale (HBMS) was developed by Champion, which has Cronbach's alpha ranges from 0.73–0.93 (Champion, 1993). The Arabic revised version of the BMS was developed by Mikhail and Petro-Nustas (2001). The questionnaire includes sociodemographics, measuring breast cancer's health beliefs, signs of breast

cancer, and risk factors, as well as Sociodemographic characteristics such as the participants' age, income level, marital status, family type, health insurance, and education level, were assessed. The perceived income level was evaluated to recognize the family's income level. The participants were asked about breast cancer knowledge and family history of breast cancer.

HBMS comprises 42 items to assess six domains, including susceptibility (five items), seriousness (seven items), benefits (six items), barriers (six items), health motivation (item questions), and confidence (11 items). A 5-level Likert scale was applied for scoring ranging from strongly disagree (1 point) to strongly agree (5 points), with the total score ranging between 42 and 220.

Inclusion/Exclusion Criteria

The inclusion criteria include females able to read, write, and understand because the data collection technique is a form of a self-report questionnaire. Additionally, BSE has suggested being adopted by 20–60 years females as a potential age group for an early detection practice for breast cancer (American Cancer Society, 2019).

Data Collection Procedure

Participant recruitment was conducted face to face by the two female nurses for those who met the inclusion criteria. Informed consent was obtained from all subjects before the participation. Participants who met the inclusion criteria were invited to participate voluntarily in the study. They were assured that there were no consequences for their refusal; the participants were completely anonymous; hence at any time, participants had the option to withdraw from the study.

HBMS was numerically coded and provided with a closed envelope for each participant to assure confidentiality. Furthermore, the investigators were postings a flyer that calls for visitors interested in participating in opening contact with the data collector. In addition, the primary investigator has protected the confidentiality of the research participants' personal information. Lastly, the data collector gave the participants adequate possibility to consider whether or not to enroll in the study.

Ethical Consideration

Ethical approval to conduct the study was obtained from the Institutional Review Board (IRB). All methods were performed in accordance with the relevant guidelines and regulations. The aim of the study was clearly described to the participants. Confidentiality was guaranteed, and the participants were assured about the anonymity of their data. Each participant was assigned an identification number on the tool. For more confidentiality, the collected data for this study were stored in a locked file cabinet.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 22 was used to analyze the data. Descriptive statistics included (frequency, percentage, mean, and standard deviation) were used to analyze the demographic data. Binomial logistic regression was used to predict the probability of the practice of BSE in the last year, now, and in the future based on knowledge and demographic variables.

Results

Sample Characteristics

Most participants were married (F = 128, 64%), and around half of them had a bachelor's degree (F = 95, 47.5%). The mean age of the participants was 36.18 (SD = 10.87). Regarding the history of breast cancer, most of them didn't have a personal history (F = 174, 87%), and more than half of them had a family history of breast cancer (F = 114, 57%). Finally, 95 participants have private medical insurance. (Detailed information about demographics is presented in Table 1).

Knowledge and Practice on BSE

Table 2 presents the Knowledge and Practice of BSE. Around 35 participants heard about breast cancer from doctors or nurses, 18 participants from the media, and 14 participants from their families. At the same time, about 29.5% of participants heard about breast self-examination from doctors or nurses, followed by the media (11.5%) and 7% from newspapers.

About 73 participants don't practice BSE; furthermore, 30% of the participants didn't practice the BSE in the past, and 14% of the participants don't have a plan to practice BSE in the future. In contrast, 16.5% of the participants practiced BSE on monthly basis. However, 26.5% have a plan to practice BSE monthly in the future. (Detailed information on BSE practice is presented in Table 2).

Health Belief

Table 3 showed the Participants' Responses to HBM Subscale; the mean score for confidence to perform BSE was 23.52 ($SD = 7.52$). Moreover, the mean of the benefits of BSE is = 17.02 ($SD = 4.15$). Also, the mean of the barriers to performing BSE was (6.3, $SD = 3.85$). (Detailed information about HBMS is presented in Table 3).

Prediction of BSE Practice by age and HBM Subscale

Binomial logistic regression was executed to determine the effects of age and HBMS on the likelihood that participants

Table 1. Participants' Demographic Characteristics.

		Frequency	Percentage
Education	High school	40	20%
	Diploma	27	13.5%
	Part of Bachelor	10	5%
	Bachelor degree	95	47.5%
	Higher education	28	14%
Marital Status	Single	64	32%
	Married	128	64%
	Divorce or Widow	7	3.5%
Family History about Breast Cancer	No	114	57%
	Mother	31	15.5%
	Sister	21	10.5%
	Second degree relatives	34	17%
Personal History of breast cancer	Yes	26	13%
	No	174	87%
Medical Insurance	No	45	22.5%
	Private	95	47.5%
	Governmental	23	11.5%
	Military	12	6%
	Other	25	12.5%
	Mean	Std. Deviation	Min. – Max.
Age	36.18	10.877	20 - 60

practice BSE in the last year, now, and in the future. The logistic regression model showed that the impact of confidence on practicing BSE in the previous year was statistically significant ($B = 0.141$, odds ratio = 1.151, $p < .001$).

Regarding practicing BSE this year, the regression model showed only two predictors were statistically significant as presented in Table 4: barriers as negative predictive value ($B = -0.110$, odds ratio = 0.896, $p = .042$) and confidence as positive predictive value ($B = 0.130$, odds ratio = 1.193, $p < .001$). Concerning the participants' plan to practice BSE in the future, BSE benefits were statistically significant as positive predictive value for practice BSE in the future ($B = 0.165$, odds ratio = 1.179, $p = .011$).

Discussion

The current study aimed to evaluate the level of knowledge and practice about breast cancer and assess the effect of health related-behaviors on BSE in a group of females aged 20–60 in Jordan. Moreover, to identify the relationship between health beliefs (Perceived susceptibility, barriers, seriousness, confidence, benefits, and health motivation and BSE frequency among Jordanian women.

In the current study, most participants were aware of breast cancer and agreed that social media was the main source of information for their knowledge. Other studies conducted in Saudi Arabia in 2015 and 2020 stated that most participants displayed a moderate knowledge level concerning breast cancer, and the primary source of information about breast cancer is social media (Al-Haji et al., 2015; Alomair et al., 2020). Another study by Ewaid et al. in Iraq showed that most respondents had information about breast cancer risk factors. In addition, the internet and television were the primary sources of information about breast cancer (Ewaid et al., 2018). Furthermore, similar to the current study results, Ibnawadh et al. reported that social media was the main source of BSE knowledge (Ibnawadh et al., 2017). Other studies reported inconsistent results with the present study's findings; Dundar et al. conducted a study in western Turkey that stated that the primary source of information about breast cancer is health care professionals (Dündar et al., 2006).

Most participants in the current study assumed that they had heard about BSE; however, around one-third of the participants did not practice it. Ewaid et al. stated that the BSE practice of females in Iraq was poor because they have insufficient knowledge about breast cancer, and around a quarter of the students practiced BSE (Ewaid et al., 2018). Another study conducted in Iraq stated that less than half of the participants practiced BSE. A lack of understanding of how to correctly perform the BSE technique was the most common explanation for not doing so. Nearly 84% of the participants were able to teach others in the BSE methodology (Alwan et al., 2012).

A study conducted in Iran stated that participants' knowledge regarding breast cancer and BSE is insufficient, and knowledge level of breast cancer was significantly linked with BSE performance (Akhtari-Zavare et al., 2014). Another study conducted in Jordan indicated

Table 2. Knowledge and Practice on Breast Self-Examination.

		Frequency	Percentage
Have you heard about breast cancer & Source of Information	No	13	6.5%
	Family	14	7%
	Doctor or Nurse	35	17.5%
	Friends	6	3%
	Media	18	9%
	Newspaper	10	5%
	Other	104	52%
Have you heard about breast self-exam & Source of Information	No	10	5%
	Family member	10	5%
	Doctor or Nurse	59	29.5%
	Friends	3	1.5%
	Media	23	11.5%
	Newspaper	14	7%
	Other	81	40.5%
Did you practice BSE in the last year	No	60	30%
	Monthly	33	16.5%
	Once per 2-3 months	22	11%
	Once every 6 months	29	14.5%
	Once per year	40	20%
	Others	16	8%
Are you practicing BSE	Yes	66	33%
	No	73	36.5%
	Sometimes	61	30.5%
Do you have a plan to practice BSE in the future	No	28	14%
	Monthly	53	26.5%
	Once per 2-3 months	31	15.5%
	Once every 6 months	45	22.5%
	Once per year	43	21.5%

Table 3. Participants' Responses to Health Belief Model Subscale.

	Minimum	Maximum	Mean	Std. Deviation
Susceptibility	0	20	9.68	3.49
Seriousness	0	28	13.65	5.57
Benefits	0	24	17.02	4.15
Barriers	0	22	6.30	3.85
Confidence	0	42	23.52	7.52
Motivation	0	28	18.95	4.30

Table 4. Prediction of BSE practice by age and Health Belief Model Subscale Using binomial logistic regression.

	B	S.E.	P value	Odds Ratio	95% C.I. Lower	95% C.I. Upper
Did you practice BSE in the last year						
Susceptibility	−.016	.057	.779	.984	.880	1.100
Seriousness	.019	.035	.580	1.020	.952	1.093
Benefits	−.012	.052	.818	.988	.893	1.093
Barriers	−.063	.052	.228	.939	.848	1.040
Confidence	.141	.030	**< .001**	1.151	1.086	1.220
Motivation	.006	.047	.906	1.006	.917	1.103
Age	.030	.018	.102	1.030	.994	1.067
Are you practicing BSE						
Susceptibility	−.048	.054	.378	.953	.858	1.060
Seriousness	.050	.035	.145	1.052	.983	1.126
Benefits	.004	.051	.940	1.004	.908	1.109
Barriers	−.110	.054	**.042**	.896	.807	.996
Confidence	.130	.028	**< .001**	1.139	1.078	1.204
Motivation	.033	.048	.486	1.034	.942	1.135
Age	−.001	.015	.945	.999	.969	1.030
Do you have a plan to practice BSE in the future						
Susceptibility	.060	.069	.386	1.062	.927	1.217
Seriousness	−.084	.046	.069	.920	.840	1.007
Benefits	.165	.065	**.011**	1.179	1.039	1.338
Barriers	−.064	.059	.277	.938	.836	1.053
Confidence	.068	.037	.067	1.070	.995	1.151
Motivation	−.008	.059	.887	.992	.883	1.114
Age	.003	.023	.896	1.003	.959	1.049

that 34.9% were aware of BSE, but it was carried out by only 11%. So, the breast cancer awareness among female students in Jordan and BSE performance are insufficient (Suleiman, 2014). Furthermore, Jahan et al. reported that 69.7% of the women had never heard about BSE, and about 18.7% said that they practiced it (Jahan et al., 2006). Ahmed et al. stated that although about 71.4% of the females in Pakistan knew what BSE was, only 33.1% had performed it (Ahmed et al., 2018). Dadzi and Adam stated that about 64.9% of the females in Ghana had good knowledge of breast cancer and that only 37.6% of them practice BSE (Dadzi & Adam, 2019). Moreover, Koc et al. reported that around 73.3% of female university students in Turkey had heard about BSE, and only about half of them stated that they practice BSE (Koc et al., 2019). Moreover, El Bcheraoui et al. reported a higher incidence of non-compliance with breast cancer screening measures in Saudi Arabia (89%) (El Bcheraoui et al., 2015).

In developing nations, females seek medical care when cancer has already entered an advanced phase. There may be several explanations for this delayed practice: Lack of awareness and knowledge of the importance of cancer screening measures are the frequently described reasons for paying no attention to screening measures (Elkum et al., 2007). So, developing an early detection program for breast cancer could be the most viable technique in a population where most cancers eligible for early detection are detected in the late stages. From its late stages (III and IV) to its early stages (0, I, and II), where the condition is more

curable, survival rates are highest, and care costs are lowest, the early detection program can downgrade the present status of a breast cancer diagnosis.

Strengths and Limitations

The current study includes some limitations concerning the study design; cross-sectional or descriptive designs can limit inferences of causality (Brady Germain & Cummings, 2010). Another limitation of this study's findings is not intended to be generalized but rather to be used to understand the experiences of BSE practices and attitudes among females in Jordan.

Implications for Practice

The Health beliefs model can promote early detection of breast cancer by enhancing knowledge and awareness of BSE. As a result, women should be advised to self-monitor their breasts in order to recognize abnormalities. Effective educational strategies are needed to enable women to participate in daily BSE.

Conclusion

To summarize, breast cancer is the most prevalent cancer in females and can be fatal if not detected early. Advance detection can help people live longer and have a better quality of life. Various diagnostic tools have been developed to assist in the early detection of cancer. CBE and mammography are recommended as primary diagnostic methods by the World Health Organization, with BSE as a secondary method in the absence of CBE and mammography, even though BSE is still useful for increasing awareness and discovering any abnormal changes in the breast.

Authors' Contributions

Suhad Alsater contributed for the conceptualization of the article. Yasar Qutaiba contributed for the validation and editing of the article. Ruba Abu-Sa'da contributed for the data curation and methodology of the article. Aladeen Alloubani contributed for the writing-original draft and formal analysis of the article.

Availability of Data and Material

The data is available upon request.

Code Availability

SPSS version 21 was used to analyze the data.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical Approval

Ethical approval to conduct this study was received from the Institutional Review Board (IRB) at the King Hussein Cancer Center. All methods were performed in accordance with the relevant guidelines and regulations.

Informed Consent

Informed consent was obtained from all subjects prior to the participation.

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