

Knowledge and Practice of Breast Cancer Screening Among Jordanian Nurses

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Purpose/Objectives: To examine Jordanian nurses' knowledge of a and proficiency with breast self-examination (BSE) and early detection of breast cancer.

Design: Descriptive.

Setting: Seven governmental and three private hospitals in the country of Jordan.

Sample: 395 female nurses working in different healthcare settings. Their ages ranged from 21–51 years ($\bar{X} = 31$); nursing experience ranged from 1–30 years ($\bar{X} = 16$).

Methods: Subjects completed a researcher-developed knowledge test consisting of 24 questions derived from the American Cancer Society's guidelines regarding risk factors associated with breast cancer and methods of early detection and from Jordan's breast cancer statistics. Responses to the knowledge test were summed for an overall knowledge score. Descriptive statistics were used to summarize data.

Main Research Variables: Knowledge of breast cancer and early detection and practice of BSE.

Findings: Nurses had low mean levels of knowledge about early detection and facts related to breast cancer in Jordan ($\bar{X} = 51\%$, $SD = 19$). Although 86% ($n = 343$) of the nurses reported performing BSE, only 18% ($n = 62$) reported doing so on a monthly basis.

Conclusions: Nurses had limited levels of knowledge about breast cancer and methods of early detection; few nurses practiced BSE monthly.

Implications for Nursing: Continuing education programs for nurses are urgently needed to improve nurses' knowledge about breast cancer and BSE. Additional studies to examine the impact of other variables on the practice of early-detection methods should be conducted, such as those that determine faculty knowledge and beliefs about early detection, those that assess curriculum content about breast cancer and its early detection, and those that assess other healthcare providers' knowledge and beliefs about early detection. Intervention studies that aim to increase nurses' knowledge of breast cancer and their practice of early-detection methods would be beneficial.

Breast cancer is one of the most serious diseases affecting women in Jordan and the most common cause of cancer mortality among women (Alma'aitah, Haddad, & Umlauf, 1999). According to the latest statistics available, 300 new cases of breast cancer are diagnosed each year and 75% of them are diagnosed in late stages. In addition, the incidence of breast cancer has increased in Jordan; the crude incidence rate per 100,000 people is 21.3 (Breast Cancer Registry, 1997).

In most cases, female healthcare providers are the preferred source of information about breast cancer screening because women feel more comfortable asking them questions (Ludwick, 1992). Healthcare providers' increased knowledge has been associated with the use of breast cancer screening

programs (Odusanya & Tayo, 2001). Thus, female nurses play a vital role in increasing women's awareness of early detection and providing adequate information about breast cancer screening.

The purpose of this study was to describe the levels of knowledge of Jordanian nurses about breast cancer and its early detection. The specific aims of the study were to describe Jordanian nurses' knowledge about breast cancer, find correlations between demographic variables and different levels of knowledge, and determine the nurses' practice of breast self-examination (BSE).

Literature Review

Breast cancer is a health problem that threatens the lives of women in Jordan. Jordan is home to 2,200,219 women; 67% are housewives. The mean age of marriage is 24 years; the average number of children is 3.8 per woman, and about 56% of married women use family-planning methods. About 1,200,000 Jordanian women are 15 years of age or older; only 12% of Jordanian women work. The average monthly income for a working Jordanian woman is \$250 per month, versus \$300 for men (Jordan Department of Statistics, 1994).

According to the latest statistics available, breast cancer is the leading cause of cancer deaths among Jordanian women and the second leading cause of all deaths (Breast Cancer Registry, 1997). About 74% of breast cancer cases are diagnosed in late stages, and little is known about early-detection practices of Jordanian women and related barriers (Breast Cancer Registry).

The limited statistics that are available about breast cancer among Jordanian women show that the median age at diagnosis is 49 years. In 1998, 47% of women diagnosed with breast cancer were 45 years of age or younger. Unfortunately, no studies have explored the reasons for early age at diagnosis among Jordanian women (Breast Cancer Registry, 1997). Seventy-eight percent of cases are diagnosed as infiltrating ductal carcinoma and 7.3% as lobular carcinoma (Jordan Department of Statistics, 1999). About 83% of diagnosed tumors

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Quick Facts: Jordan

Geography: Jordan is a Middle Eastern country that covers 35,445 square miles, about the size of Indiana.

Population: Jordan has a population of 4.9 million, with projected growth to 8.5 million by 2025. Forty-five percent of the Jordanian population is younger than age 15; only 3% of the population is older than 65. Life expectancy is 70 years for women and 66 years for men. The main causes of death are cardiovascular diseases, followed by cancer.

Economy: Jordan has one of the smallest and poorest economies in the Middle East. In 2004, the country began to experience slow economic growth, declining per-capita income, and high levels of unemployment. The average personal annual income is \$1,200.

Education: Jordan has one of the most highly educated labor forces among Arab countries; adult literacy is about 82%. English is widely spoken and is taught in schools as a second language.

Social and cultural features: According to the latest statistics available, Jordan is home to 2,200,219 women; 67% are housewives. Only 12% of women are considered to be working. Single women with health problems are not desirable for marriage. Women often ignore health issues such as breast self-examination because they do not want to find anything wrong before getting married. The mean age of marriage is 24 years; the average number of children per woman is 3.8, and about 56% of married women use family-planning methods.

Health-related beliefs: Muslims are encouraged to follow the guidelines of the Koran, Prophet Mohammad, and healthcare providers to maintain their health. Muslims (about 90% of the population are Sunni Muslim) are considered responsible for the care of their own bodies by avoiding anything that could cause any harm to their mental or physical health. In the Jordanian culture, people have a variety of beliefs related to health and illness. Some believe in religious teachings, others in magic and the evil eye. The evil eye is believed to be caused by people who have blue eyes or who tend to describe beauty, health, and wealth of another person without simultaneously saying verses of the Koran.

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are larger than 2 cm at diagnosis (Breast Cancer Registry). The statistics appear to indicate that Jordanian women do not practice breast-screening tests frequently.

Increased body weight and smoking are associated with higher incidence of breast cancer (Love & Lindsey, 2000). About 70% of Jordanian women are overweight, 30% are diagnosed with hypertension, and 10% of women older than 25 smoke cigarettes (Jordan Department of Statistics, 1999). The data suggest high-risk factors correlated with increased incidence of breast cancer among Jordanian women.

Although breast cancer is a major threat to Jordanian women, little is known about their early-detection practices. A significant need exists in the Arabic literature for studies that explore factors affecting women's practice of early-detection methods and to determine what information Jordanian women have about breast cancer.

To increase public awareness of the importance of breast cancer screening and to build women's confidence in practicing BSE, healthcare professionals must understand what women know and do not know about breast cancer, how

women perceive the problem, and how they feel about breast cancer and early detection, as well as the barriers to and the predictors of the practice of BSE and other early-detection methods (Champion, 1995).

In Jordan, mammograms are not recommended or conducted on a regular basis; they are not incorporated into clinical checkups in governmental health clinics, where the majority of women receive their health care. Many women have to pay for the procedure out of pocket.

Mammograms are not easy to obtain by most Jordanian women, especially those of low socioeconomic status, who are the majority of the population in Jordan. A mammogram costs \$35–\$100, and the average personal annual income is \$1,200. At the same time, feelings about exposing body parts to strangers could be a significant barrier to mammograms and clinical breast examination (CBE) (Alkhasawneh, 2002).

Investigating barriers to an inexpensive, noninvasive, and private screening method such as BSE would help healthcare professionals start a breast health awareness program. Understanding barriers to BSE also would help in planning for future research. In addition, focusing on one screening behavior at a time might help to establish a better understanding of the behavior (Lauver, 1987; Madanat & Merrill, 2002).

Studies that explore the practice of early-detection methods by healthcare providers do not exist in the Arabic literature. Based on the clinical experience of the author, healthcare providers do not commonly practice CBE. Literature has shown a significant relationship between nurses' confidence in performing BSE and their recommendation of BSE to their clients (Agars & McMurray, 1993; Champion, 1995).

Some researchers believe that using combined methods of breast screening helps to detect breast cancer (Champion, 1995; Howe, 1979). The American Cancer Society (ACS) and National Cancer Institute (NCI) have recommended the combined use of BSE, CBE, and mammography for early detection of breast cancer (Foxall, Barron, & Houfek, 1998). In addition, the ACS and NCI have urged healthcare providers to teach women proficient methods of BSE. The ACS also provides guidelines for conducting BSE and CBE.

Nurses can play a vital role in increasing women's awareness of breast cancer and early-detection methods. A study showed that Jordanian women are not proficient in BSE (Alkhasawneh, 2002). In a sample of 150 women, only 48% practiced BSE; of those who practiced, only 12% practiced BSE on a monthly basis. Knowledge of, confidence in, and frequency of BSE were significantly related to BSE practice. Better proficiency of BSE and increased age were significant factors related to the practice of BSE.

Awareness of methods of early detection is correlated with increased practice of BSE. A review of 16 descriptive studies that examined variables associated with breast cancer screening behaviors revealed that fear of cancer, decreased knowledge about breast cancer and early-detection methods, and lack of confidence in ability were the most frequent barriers to the practice of early-detection methods (Yarbrough & Braden, 2001).

Levels of knowledge of healthcare providers about breast cancer screening play a significant role in the content of patient education. Studies have shown that knowledgeable healthcare professionals practice CBE and teach women about risks of breast cancer more than healthcare providers who have limited levels of knowledge (Odusanya & Tayo, 2001;

Tessaro & Herman, 2000). In addition, a positive significant relationship was found between nursing students' knowledge about breast cancer and BSE and their practice of BSE; researchers reported that increased knowledge improved the students' practice of BSE during their study years and after graduation (Attia, Abdel-Rahman, & Kamel, 1997).

Studying female healthcare providers' knowledge and beliefs about breast cancer and its early detection is helpful. Because nurses have close and long contact with their clients, understanding factors that may affect nurses' health behaviors is important. One study found a significant relationship between nurses' own practice of BSE and the likelihood that they would teach BSE to their female clients (Ludwick, 1992). An exploratory study was conducted to examine nurses' practice and teaching of BSE. The study showed that nurses who had more experience in nursing or had a friend diagnosed with breast cancer were more likely to practice BSE as well as teach women about it (Han, Ciofu Baumann, & Cimprich, 1996).

A self-administered questionnaire was sent to 447 Singapore nurses in the Public Health Service to examine their knowledge and practice of breast cancer screening (Chong, Krishan, Hong, & Swah, 2002). Nursing qualifications, current nursing post, and current workplace were significantly related to Singapore nurses' knowledge about breast cancer. Nurses had certain misconceptions about breast cancer and breast cancer screening. Gender of the doctor as well as marital status were significant predictors of nurses practicing CBE. Nurses who were married and had a female doctor asked to have a CBE more than other nurses in the study. Nurses who were 50 years of age or old, had ever been married, and had a positive history of breast disease were more likely to have had a mammogram.

Franek, Nowak-Kapusta, and Cabaj (2004) studied a sample of 193 Polish nurses to evaluate their knowledge of methods of early detection of breast cancer and the extent to which they used them. The results showed that 63% of nurses knew about the early detection of breast cancer. Almost 50% of nurses performed BSE regularly; unfortunately, not all of them did it correctly. Only 38% of participants had been examined, 33% had had a mammogram, and 41% had had breast ultrasonography. Despite their education, nurses were not knowledgeable enough about methods to prevent and detect breast cancer.

Female healthcare providers, such as nurses and physicians, constitute the primary source of information about breast cancer for a large number of women (Bailey, 2001). Female nurses, who make up the majority of nurses in Jordan, and other female healthcare providers could play a significant role in identifying and bridging barriers to early-detection practices among Jordanian women. Alkhasawneh (2002) found that only 27% of Jordanian women received information about breast cancer from nurses. Jordanian women prefer to discuss women's issues with female healthcare providers rather than male providers.

Methods

Design and Setting

A descriptive design was used to investigate the research questions. The study was conducted in different health settings during the first eight months of 2004. The sample was recruited from seven governmental and three private hospitals.

Subjects were recruited based on eligibility criteria. Two scales that had been developed by the researcher in previous work were used to measure knowledge about breast cancer and proficiency in BSE.

Sample

The sample size was determined according to Cohen's (1992) guidelines: $\alpha = 0.05$, $\text{power} = 0.80$, and medium effect size. Additional subjects were recruited to compensate for missing data and increase the heterogeneity of the sample. The convenience sample of 450 female RNs working in private and governmental hospitals in Jordan was invited to participate in the study. Those who had been diagnosed with breast cancer were excluded because they might have had more and different knowledge than healthy nurses. Nurses with three-year diplomas and baccalaureate degrees were selected because in Jordan they are directly responsible for client care and education. The nurses worked on medical, surgical, maternity, and intensive care units; none of them had received special education in oncology. The number of recruited subjects varied from one setting to another based on the size of the hospital and number of nurses working there.

The response rate was 88%. The final sample consisted of 395 female nurses aged 21–51 years. Twelve percent of the participants did not respond because they left work during the data collection period, felt uncomfortable talking about breast cancer, or did not have time to complete the questionnaire.

Data Collection and Instruments

Two questions measured the practice of BSE: One asked whether nurses had ever practiced BSE previously, and the second asked women to list the number of times they had practiced BSE in the previous 12 months. Available answers ranged from once per 12 months, once every 6 months, once every 2–3 months, and once every month.

The breast cancer knowledge test had been developed by the researcher in a previous study using the health statistics of the Jordanian Ministry of Health (1999) and the ACS guidelines about risk factors for breast cancer (Alkhasawneh, 2002). Content validity was checked, and 87% agreement existed among expert judges. In the previous study, the test-retest reliability of the instrument at a three-week interval was $r = 0.78$, and the internal consistency was $\alpha = 0.73$ (Alkhasawneh, 2002). In the present study, the internal consistency was $\alpha = 0.76$.

The test included 24 questions, which measured knowledge of certain facts about breast cancer in Jordan, benefits of early detection, and breast cancer risk. Subjects responded "yes," "no," or "I don't know." Total knowledge scores were computed by adding the questions answered correctly.

Procedures

Approval for the study was obtained from the Committee of Scientific Research at Hashemite University. Questionnaires were answered anonymously. Permission was obtained from administrators of all settings. The study protocol, abstract, and questionnaires were given to all administrators. One research assistant was hired and trained to collect data. The questionnaires and a cover letter were given to each nurse

administrator at each setting who, in turn, distributed them to the nurses who worked in their areas. The purpose of the study was explained to nurses, and their right to withdraw was ensured. Each participant signed an informed consent form. Each nurse received a description of the purpose and aims of the study along with the study questionnaires. A research assistant visited the hospitals, met with nursing administrators, and explained the study aims. Meeting with all nurses during different shifts was difficult; therefore, the research assistant left questionnaires with the head nurse for distribution among nurses on different shifts. The research assistant returned to the nurse administrator at each setting who received all questionnaires from head nurses and collected the questionnaires. In cases when the nurse administrator did not collect the questionnaires, the research assistant visited head nurses in their units and collected the completed questionnaires.

Data Analysis

Data were analyzed using SPSS® version 10.01 (SPSS Inc.). Specific aims were analyzed using descriptive statistics appropriate to the level of measurement.

Results

Sample Characteristics

The participants' ages ranged from 21–51 years, with a mean of 31 (SD = 7); 93% of the nurses were 40 or younger. Regarding clinical experience, 64% of the respondents had 11 years' or less. Ninety percent of nurses had received less than 17 years of education, and 62% were married.

Ninety-one percent of the nurses did not have a relative with breast cancer. Eighty-five percent of them received information about breast cancer during undergraduate studies; 79% received information about BSE during undergraduate studies, and 55% received information about different early-detection methods during their studies. None of the nurses received any training on methods of conducting CBE or BSE. Ninety-one percent of the nurses had heard about mammograms during their clinical experience.

Generally, nurses who refused to participate in the study were older and had varied years of experience. When the research assistant asked them about reasons they refused to participate, most of them indicated lack of time and fear of talking about breast cancer.

Knowledge of Breast Cancer

Table 1 shows respondents' knowledge about breast cancer. Scores ranged from 0–24, or 0%–100% correct. The mean score on the knowledge test was 13, SD = 4 (51% correct, SD = 19%). Only one nurse answered all of the questions correctly. Twenty-two percent of nurses knew that women in Jordan are diagnosed with breast cancer at early ages. Forty-eight percent knew that women in Jordan are diagnosed in late stages of breast cancer.

Regarding risk factors related to breast cancer, 29% of nurses knew about the relationship between estrogen and breast cancer. Fifty-five percent of nurses believed that a woman should not worry if she has a painful breast lump. Only 10% of nurses knew that women who were diagnosed with breast cancer previously are at higher risk to develop breast cancer in the other breast.

In questions that determined knowledge about health-promotion behaviors of women, 46% knew that obesity increases the risk of breast cancer, whereas 48% knew that increased fat in the diet increases the risk of breast cancer. Sixty-four percent knew that regular exercise could decrease the risk of breast cancer.

Nurses' knowledge about early-detection methods was limited, too. Although 90% of nurses knew that early detection can result in more effective treatment, only 10% knew that prognosis of the disease differs with stage at diagnosis. Thirty-eight percent of nurses believed that breast cancer is a fatal disease regardless of its stage at diagnosis.

Demographic Factors Associated With Breast Cancer Knowledge

Women who answered more than 50% of the questions correctly were younger, had fewer years of experience, and were married. About 75% of women who scored higher than 12 (50% correct) were 40 years or younger, only 15% of them had more than 10 years of experience, and about 85% of them were married.

Practice of Breast Self-Examination

Although 330 nurses reported performing BSE during their lifetimes, only 18% (n = 71) of the nurses practiced BSE on a monthly basis (see Table 2). The mean total knowledge score for those who practiced BSE on a monthly basis was 14 (SD = 4). Sixty-one percent (n = 44) of those who practiced BSE were married.

Discussion

Findings of the study are consistent with those of other studies that discovered that nurses had limited knowledge about the risk factors associated with breast cancer. Odusanya and Tayo (2001) examined Nigerian nurses' knowledge of and attitudes toward breast cancer and early detection. The researchers reported that only 27% of the respondents understood as many as three of the risk factors, but none of the nurses in the sample knew all of the risk factors associated with breast cancer.

Levels of knowledge of Jordanian nurses in the current study were no better than levels of knowledge of other Jordanian women. A previous study that examined knowledge of 145 Jordanian women aged 18–70 years using the same knowledge test reported that the mean knowledge score of the women was 50% correct (SD = 12%) (Alkhasawneh, 2002). This was comparable to the mean score of 51% correct in the current study. Madanat and Merrill (2002) examined knowledge of Jordanian nurses and teachers about breast cancer and reported that nurses did not differ from teachers on the general awareness questionnaire assessing knowledge of breast cancer risk factors and myths.

Some questions on the knowledge test may have been answered based on certain cultural or religious beliefs. For example, some women strongly believe that breastfeeding will decrease risk of breast cancer regardless of scientific evidence. Only 10% (n = 40) of women incorrectly answered the question about breastfeeding decreasing the risk of breast cancer. Another interesting example is questions that examined the relationship between estrogen and breast cancer. Women may have answered some questions based on their cultural beliefs

Table 1. Scores on Items Measuring Knowledge of Breast Cancer

Item	Correct		Incorrect	
	n	%	n	%
Risk factors for breast cancer are any factors that increase a woman's risk of getting breast cancer.	279	71	116	29
A woman's risk of breast cancer increases with increase in age.	303	77	92	23
Breast cancer risk is higher among women whose close blood relatives have the disease.	339	86	56	14
It is estimated that 50%–60% of women who inherited the gene of breast cancer will develop breast cancer at the age of 70.	95	24	300	76
A woman with breast cancer in one breast has decreased risk of developing a new cancer in the other breast or in another part of the same breast.	38	10	357	90
Jordanian women are more likely to develop breast cancer at an earlier age than Western women.	87	22	308	78
Jordanian women are more likely to develop breast cancer at later stages.	188	48	207	52
Breast cancer has the same prognosis regardless of stage at diagnosis.	41	10	354	90
A painful breast lump could not be cancer cells.	178	45	217	55
Women who started menstruation at earlier ages (before age 12) are at lower risk for developing breast cancer.	108	27	287	73
Women who reached menopause at later ages (after age 50) are at higher risk for developing breast cancer.	121	31	274	69
Women who have no children are at higher risk for developing breast cancer.	282	71	113	29
Women who had their first child after the age of 30 are at higher risk for developing breast cancer.	183	46	212	54
Breastfeeding can decrease the risk of breast cancer.	355	90	40	10
Obesity increases the risk of breast cancer.	180	46	215	54
A high-fat diet can increase the risk of breast cancer.	205	48	190	52
Physical activity can decrease the risk of breast cancer.	254	64	141	36
Trauma of the breasts increases the risk of breast cancer.	134	34	261	66
Detecting breast cancer in early stages can lead to cure.	246	62	149	38
Early detection of breast cancer can help with successful treatment of breast cancer.	355	90	40	10
Every woman older than 40 years of age should have an annual mammogram.	302	77	93	23
Every woman aged 20–39 years should have a clinical breast examination every three years.	230	58	165	42
Every woman older than 40 years should have an annual clinical breast examination.	291	74	104	26
Every woman who is 20 years or older should perform breast self-examination once every month.	286	72	109	28

N = 395

rather than their acquired knowledge about early detection of breast cancer.

Arabic women, including Jordanian women, believe that menstruation is a significant aspect of femininity and that its occurrence is proof of femininity (Meleis & Meleis, 1998). Perhaps that is why 73% (n = 288) of the nurses believed that women who experience menarche at earlier ages are at lower risk for developing breast cancer and why 70% (n = 275) of the nurses believed that women who reach menopause at later ages are at lower risk for breast cancer. Likewise, 46% (n = 183) knew that a woman who has her first child after the age of 30 years is at higher risk for breast cancer.

Years of education were not associated with increased knowledge. Although 90% of the nurses knew that early detection can improve treatment of breast cancer, only 18% practiced BSE on a monthly basis. Of those who practiced BSE regularly, most (89%, n = 63) were younger than 40 years old and most (61%, n = 44) were married.

Although older nurses were more knowledgeable about breast cancer, they practiced BSE less frequently than younger nurses. Alkhasawneh (2002) reported that married Jordanian women practiced BSE on a regular basis more frequently than single women. The finding might be associated with the taboos associated with single women touching or exposing their body parts, or it might be because of stereotypes that diseased women are less attractive. Single women may fear being diagnosed with cancer and losing their attractiveness,

so they may avoid BSE and other early-detection methods (Alkhasawneh, in review).

Those who refused to participate in the study may be a significant indicator regarding the cultural meaning of diseases such as cancer. One of the nurses who refused to participate said, "This disease is from Allah. It is our destiny in which we can't change. What would early detection change?" Her opinion is consistent with findings reported by Underwood, Shaikha, and Bakr (1999), who recruited women who were Muslims or converted to Islam for five years or more and were able to speak English. They reported that religious beliefs and customs of Muslim women living in the United States significantly affected their practice of breast cancer screening. In addition, that study identified two factors related to Muslim women's breast cancer screening behavior. The first was related to the healthcare system in the United States: Women knew about breast cancer screening but preferred not to seek help because the healthcare system did not take their customs and beliefs into consideration. The second was related to their cultural and religious background: Women knew that Islam encouraged health promotion and disease prevention but still expressed their belief that Allah divinely controlled their lives.

Fatalism and fatalistic beliefs are part of the five Islamic pillars that each Muslim must believe as truth; however, fatalism in Islam does not mean passivity and lack of will power. Rather, the Koran tells Muslims that they are fully responsible for their choices (De Leeuw & Hussein, 1999). The contradiction

Table 2. Description of the Practice of Breast Self-Examination (BSE)

Question	\bar{X}	SD	Range
Have you ever performed BSE during your lifetime?			
Yes	13.0	4.0	0–24
No	11.5	5.0	0–20
How many times have you practiced BSE in the past 12 months?			
Once every 12 months (n = 107)	12.1	4.4	0–22
Once every 6 months (n = 74)	13.6	4.5	0–24
Once every 2–3 months (n = 80)	13.0	3.2	2–19
Once every month (n = 70)	13.8	3.8	5–21

N = 395

between research findings regarding fatalistic beliefs and religious explanation of fatalism needs further investigation with respect to the cultural impact of religious beliefs and its relation with health screening behaviors of Muslim women.

Limitations

The convenience sample decreased the generalizability of the research findings. To decrease the limitations of convenience sampling and to ensure variations in years of education, age, and economic status, the researcher approached nurses in different settings of the three biggest cities in Jordan. The approach may have helped to decrease sampling homogeneity, but it was not a substitute for random sampling.

Implications for Nursing Practice

Jordanian nurses should increase their knowledge and practice of BSE if they are to become good role models and educators for their clients. Continuing education courses for

nurses working in different healthcare settings are needed, particularly focusing on facts about breast cancer in Jordan and their relation with increased incidence. National screening guidelines should be developed to aid nurses in practicing and teaching early-detection methods. Programs should raise awareness of healthcare providers rather than focus on increasing knowledge only; this might be achieved by expanding nurses' knowledge and developing national programs that aim to change and measure attitudes, beliefs, and barriers among nurses and other healthcare providers toward breast cancer and its early detection.

Research

The literature has focused on studies that examined adherence of women to early-detection strategies learned from healthcare professionals. Taking into consideration that learning is a reciprocal process, assessing the knowledge and attitudes of those who are expected to teach women is critically important.

Understanding how nurses perceive the breast cancer problem in Jordan and what information they have about breast cancer and its early detection is important. Further studies should examine nurses' attitudes and beliefs about breast cancer and early detection. Additional studies should examine the impact of other variables that might affect nurses' awareness of breast cancer. Studies such as those focusing on curriculum content of undergraduate programs as well as beliefs of faculty members about early detection of breast cancer are essential. Studies that examine fatalistic beliefs of Jordanian women as well as healthcare providers will be helpful in explaining and predicting the breast cancer screening behaviors of the cultural group.

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