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Knowledge, Awareness and Practice of Breast Cancer Risk Factors and Breast Self-Examination with Clinical Examination and Fine Needle Aspiration of Suspicious Cases Among Educated Female in Tikrit City

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Abstract--

Objective: *to evaluate the knowledge, awareness and practice of breast cancer, risk factors, breast self-examination (BSE), and pick up of suspicious cases of breast masses with fine needle aspiration cytology among sample of educated population in Tikrit city/Iraq.*

Method: *a cross-sectional, questionnaire-based study, a total of 335 participants were enrolled from the period of December 2018-March 2019 included 232 students, 69 schoolteachers, and 34 administrative staff, fine needle aspiration from 33 cases was performed.*

Results: *80.3% had heard about BSE (74.9%) were aware that's BSE is the method for early detection of breast cancer. 74.8%% know that is breast cancer is the commonest among women in Iraq. Only 43.9% of the participants knew the procedure of BSE, 27.8% knew the best time to perform it, and only 88 (26.3%) of participant females practiced BSE. The answers about risk factors were more accurately achieved by the teachers. Social media and internet were the major source of knowledge about BSE, followed by doctors (30.7%)Fibrocystic disease of the breast was detected as the commonest type of breast masses aspirated (23 cases).*

Conclusion: *satisfactory knowledge of educated female about breast cancer and breast self-examination, variable knowledge of various breast cancer risk factors along with inadequate practice of BSE as a method of early detection, serious need for medical health programs and actual activation of health care centers are very essential.*

Key words-- *breast cancer, risk factors, breast self-examination (BSE), cytology*

I. INTRODUCTION

Breast cancer is the most common kind of cancer and cause of death in women with total of 508.000 women per year dying worldwide.

Breast cancer is by far the most common kind of cancer and cancer cause of death among women with about 508.000 women dying of breast cancer throughout the world [1]

According to the updated WHO registration, it is estimated that breast cancer is the first prevalent malignant tumor in 154/185 countries in the world and the most common leading cause of cancer related death in

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as many as hundred countries. Worldwide, it stays the most common cancer among women representing one quarter (25%) of registered cancer in women, with about 2.1 million of newly diagnosed cancer cases in 2018[1].

The incidence of breast cancer is increasing particularly in developing countries because of the shift to the western lifestyle as sedentary lifestyle, dietary habits, late marriage & delay of first pregnancy and decreased breastfeeding periods[2, 3]. Most cases in developing countries are diagnosed in late stages. Breast cancer is a multifactorial disease and a considerable proportion of breast cancer patients in Iraq is still presented with locally advanced disease at the time of diagnosis. Breast cancer is multifactorial disease, numerous common risk factors for the disease have been established. These risk factors include female gender, increasing age, family history of BC, early menarche(before 11 years), late menopause (after 55 years), older age at first live birth, genetic mutation like BRICA1 and BRICA2 gene mutation, diet habits, postmenopausal obesity, smoking and alcohol consumption[4, 5]. Also biopsy confirmed atypical ductal hyperplasia of the breast, endogenous and exogenous hormones, oncogenic viruses and carcinogenic exposure and ionizing radiation[6-12].

Early detection of breast cancer has an important role in decreasing mortality and morbidity, and breast self-examination(BSE) is an important screening method for early detection, but females in developing countries do not practice BSE because of lack of awareness, knowledge deficiency, social customs and poor health care levels[3].

For early breast cancer detection, American cancer society recommends that women aged 40 and older should have a mammogram every year. Regarding clinical breast examination (CBE), it recommends that women in their twenties and thirties should have CBE as a part of periodic health examination by a health professional every three years. Starting at age of forty, women should have CBE by a health professional every year. In resource-poor settings, doing BSE monthly is an important choice for women in their twenties [13].

A study done in Kirkuk to evaluate the level of knowledge, attitude and practice to breast cancer and breast self- examination among educated female in Kirkuk university in Iraq, a significant association was detected between those who practice BSE and their knowledge about screening methods for breast cancer, facts that could probably lower the incidence of the disease, yet they had a positive intension towards teaching others about the screening techniques of early detection of breast cancer[14].

A recent study carried by found that there was bad knowledge and practice toward BC among women in Baghdad and a total of 61.2% of the participant women had a low knowledge, only 30.3% practice BSE and 41.8% said that they did not know how to practice it[15].

This study was designed to evaluate the KAP, the objective of the current study was to determine the knowledge, attitude and practice about breast cancer risk factors and early detection by BSE among a sample of educated women in Tikrit city, Saladdin governorate.

The current study aimed to explore educated women knowledge, attitude and practice for BC risk factors and early detection by BSE as well as to pick up positive cases with breast lumps followed by referral to the breast center in Saladdin teaching hospital for fine needle aspiration cytology procedure and proper management.

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II. METHODS

Study design

A cross sectional descriptive study was carried out from the first of December 2018 to March 2019 in Tikrit city including college students, school-teachers and administrative staff. Simple random sampling was used to choose the sample. A predesigned questionnaire form was used to collect data including demographic information, breast self-examination knowledge, awareness and practice, and breast cancer risk factors questions.

Each participant enrolled in the study was given a self-administered questionnaire which was designed in three parts to evaluate the information. The first part included socio-economic data (age, occupation, marital status, parity, body weight, current education level, etc.). the second part was concerned with the knowledge and practice of BSE and knowledge of different breast cancer risk factors, and the third part of the questionnaire was designed for women with recent or previous breast mass and how it was discovered by BSE, clinical breast examination CBE by medical staff or radiological methods. Also include the associated symptoms and signs whether it was soft, rubbery, hard textured, movable or fixed, any changes in the breast sized or asymmetry, nipple changes including retraction, ulcerations, nipple discharge (milky, purulent, bloody or brown), any associated skin changes like tethering, redness, ulceration or edema. Is there any lymph nodes enlargement, and is this enlargement indicates cancer? And if any associated changes in the contralateral breast.

Final form of the questionnaire had a total of 33 questions, 6 socioeconomic questions of which 1 assessed the knowledge of breast cancer, 4 assessed the knowledge, awareness and practice of BSE, 11 assessed the knowledge of breast cancer common risk factors, and 11 assessed the signs and symptoms associated with breast mass.

The questionnaire used for data collection was translated into Arabic language. After data collection from educated women, a lecture focused on their understanding the etiology of breast cancer, the presenting symptoms, risk factors associated with it, and breast cancer screening techniques held by the group of health awareness in the college of medicine in Tikrit University.

Permissions and ethical approval to conduct the study were obtained from the college deanship, and the school principals and directorate of education.

A women with recent or previous history of breast mass were examined by the medical awareness team which include a pathologist, gynecologist and radiologist with group of 5^{th} year medical college students, the women were referred to the breast unit which is part of surgical clinic for outpatient in Saladdin teaching hospital in Tikrit city. Radiological assessment for mass detection including mammography or ultrasonography for the affected and contralateral breasts and axillary region were performed, followed by fine needle aspiration cytology procedure examined by expert pathologist, and cytopathological reports were referred to the surgeon to arrange for proper management.

A positive answer was assigned as 1 point, whereas a wrong answer was given zero, the results were calculated as frequencies of correct answer out of the total answer of the same question.

Data were analyzed by using data analysis tool pack of Excel 365 MS office. The association was considered statistically significant when P was < 0.05.

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III. RESULTS

Table 1 summarize the frequencies of correct answer for each question, there was a significant difference between the 3 groups (P<0.05) in their knowledge conducted in questions 2, 3, 6, 7, 8,9,10,12,13,14, and 15. The answers were more accurately interpreted by teachers for the questions 1,2,3, 4, 5, 7,9,10,11,12,13, and 15. Approximately about three- quarters of the study sample (74.9%) were aware that's BSE is the mean for early detection. And 74.8% know that is breast cancer is the commonest among women in Iraq. Only 43.9% of the participants knew the procedure of BSE, and only 27.8% knew the best time to perform it. On the other hand, the relation of breast cancer with increased age; more than half of the participants (53.4%) realize that the most affected age is more than 45 years (table 1, figure 2). A large proportion 46.9%, 54%, and 38.8% respectively did not know that first degree relative with breast cancer, early menarche and late menopause, nulliparity, also 12.8% are not informed about breastfeeding protective effect against breast cancer. 34% and 35.8% of participants are respectively unaware that's oral contraceptive pills and postmenopausal obesity could be risk factors for breast cancer. Only 18.5% of did not know that is exposure to radiation at young age could increases the breast cancer risk in women. 57.3%, 49.3% and 82.7% of participant females can recognize other preventive measures including lowering of unhealthy dietary fat, decreased dietary sugar and promoting physical activity.

Table 1: knowledge of the risk factors for developing breast cancer and breast self- examination in educated female according to the occupation.

Parameter	Students	Teachers	Administrative staff	Total	P-value
Knowing that breast cancer is the commonest cancer in Iraqi women.	Y170/232 (73.2%) N 62/232 (26.7 %)	Y 62/69 (89.8%) N 7/69 (10.14 %)	Y 22/34 (64.7%) N 12/34 (35.3 %)	335	0.35
Hearing about breast self-examination (BSE)	Y 185/232 (79.7%) N 47/232 (20.2 %)	Y 60/69 (86.9%) N 9/69 (13.04 %)	Y 24/34 (70.5%) N 10/34 (29.4 %)	335	0.001
Monthly performance of BSE	Y 36/232 (15.5%) N 149/232 (64.2%)	Y 39/69 (56.5%) N 21/69 (30.4 %)	Y 13/34 (38.2%) N 11/34 (32.4 %)	335	0.025133
Getting knowledge from social media, health center workers	Social media 63/232 (27.2%) health center workers	Social media 25/69 (36.2%) health center workers	Social media 12/34 (35.3%) health center workers 4/34(11.8) % Heard from doctors 8/34 (23.5) %	335	0.572222

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	46/232 (19.8%) Heard from doctors 76/232 32.8%	16/69 (23.2%) Heard from doctors 19/69 (27.5%)			
The more affected age 12-25 26-45 More than 45	17/232 7.32 % 92/232 39.65 % 123/232 53.01 %	0/69 0% 31/69 44.92 % 38/69 55 .07 %	3/34 8.82 % 13/34 38.3 % 18/34 25.9%	335	0.228
Parameter	**Students**	**Teachers**	**Administrative staff**	**Total**	**P-value**
Presence of first degree relative affected by BC	Increase 117/232 50.4 % No relation 114/232 49.1 %	Increase 39/69 56.5 % No relation 30/69 43.47 %	Increase 21/34 61.7 % No relation 13/34 38.23 %	335	0.009
Early menarche and Late menopause	Know 106/232 45.65 % No relation 126/232 54.3%	Know 37/69 53.62 % No relation 32/69 46.37 %	Know 11/3 4 32.35 % No relation 23/34 67.6 %	335	0.00084
Nulliparity increase risk in women	Y 140/232 (60.34 %) N 92/232 (39.6 %)	Y 36/69 (52.17 %) N 33/69 (47.82 %)	Y 29/34 (85.3%) N 5/34 (14.7 %)	335	0.00102
Breast feeding	Decrease the risk 203/232 87.5 % Not decrease the risk	Decrease the risk 63/69 91.3% Not decrease	Decrease the risk 26/34 76.4 % Not decrease the risk 8/34 23.6 %	335	0.00034

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	29/232 12.5 %	the risk 6/69 8.7%			
Increase dietary unhealthy fat	Know 122/232 52.5 % Do not know 110/232 47.4 %	Know 48/69 69.56% Do not know 21/69 30.43 %	Know 22/34 64.7 % Do not know 12/34 35.3 %	335	0.00116
Parameter	**Students**	**Teachers**	**Administrative staff**	**Total**	**P-value**
Increase dietary sugar	Agree 90/232 38.79 % Disagree 42/232 18.1 %	Agree 54/69 78.26 % Disagree 15/69 21.7 %	Agree 21/34 61.8 % Disagree 13/34 38.2 %	335	0.777
Radiation exposure during adolescence increase the risk	Agree 187/232 80.6 % Disagree 45/232 19.4 %	Agree 62/69 89.9 % Disagree 7/69 10.1 %	Agree 24/34 70.6 % Disagree 10/34 29.4 %	335	0.0022
Oral contraceptive pills administration increases the risk	Agree 158/232 68.1 % Disagree 74/232 31.9 %	Agree 48/69 69.6 % Disagree 21/69 30.4 %	Agree 15/34 44.1 % Disagree 19/34 55.9 %	335	0.00055
Parameter	**Students**	**Teachers**	**Administrative staff**	**Total**	**P-value**
Post-menopausal obesity increases the risk of BC	Agree 152/232 65.5 % Disagree 79/232 34.5 %	Agree 44/69 63.8 % Disagree 25/69 36.2 %	Agree 18/34 52.9 % Disagree 16/34 47.1 %	335	0.021
Promoting physical activity decreases BC risk.	Agree 188/232 81.03 %	Agree 60/69 86.9 %	Agree 29/34 85.3 % Disagree 5/34 14.7 %	335	0.022

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	Disagree 44/232 18.96 %	Disagree 9/69 13.04 %			

Table 2: frequency of source of knowledge of breast self-examination according to occupation

Item	**The source**				
	Social media No(%)	**Health care centers No.(%)**	**Doctors No. (%)**	**total**	**P-value**
Students	63 (27.2%)	46 (19.8%)	76 (32.8%)	232	0.0924
Teachers	25 (36.2%)	16 (23.2%)	19 (27.5%)	69	0.0357
Administrative staff	12 (35.3%)	4 (11.8%)	8 (23.5 %)	34	0.01852417

Table 2 revealed the frequency of source of knowledge of BSE, 80.3% had heard about BSE(figure 1); social media and internet were the major source of knowledge (65.4%), followed by doctors (30.7%) and lastly the health care workers (16.7%). A significant greater proportion of students and teachers obtained their information about BSE from the doctors(P=0.0357).

Table 3: The practice of breast self-examination among the participants according to occupation

Item	**Know the BSE is a method of early detection**	**Know how to perform the procedure**	**Know the best time**	**P-value**
Student	Y: 169/232 (72.8%) N: 16/232 (6.9%)	Y: 84/232 (36.2%) N:101/232(43.5%)	Y: 50/232 (21.6%) N: 135/232 (58.1%)	0.03851
Teachers	Y: 60/69 (86.9%) N: 6/69 (8.7%)	Y: 45/69 (65.2%) N: 15/69 (21.7%)	Y: 21/69 (30.4%) N: 39/69 (56.5%)	0.039192
administrative staff	Y: 22/34 (64.7%) N: 2/34 (5.9%)	Y: 18/34 (52.9%) N: 6/34 (17.6%)	Y: 22/34 (64.7%) N: 2/34 (5.9%)	0.000000264

Table 3 demonstrates the practice of BSE by the participants, a significant P values (< 0.05) were observed in the three groups, 74.9% for knowledge of BSE as a method of early detection of breast cancer, 43.9% of participants are knew how to perform the BSE procedure and 27.7% of the females knew the best time to practice it. Only 88 (26.3%) of the participants essentially practiced BSE each month (Table 1).

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Table 4: Type of current breast masses identified by fine needle aspiration(33 cases) cytology or previously confirmed tissue biopsy(2 cases).

FNA or biopsy findings	**Students**	**Teachers**	**Administrative staff**
Fibroadenoma	3		
Galactocele		1	
Fat necrosis			1
Fibrocystic disease of the breast:including Fibroadenosis	2(simple breast cyst) 12	4(nonproliferative type)2 (proliferativetype)*	3 (nonproliferative type)
Abscessing mastitis		1	2
Chronic lymphocytic mastitis			1
Lipoma			1
Ductal carcinoma*		2	

* 2 cases were previous biopsy-confirmed (1 fibrocystic disease, and 1 is ductal carcinoma)

Regarding the third part of the questionnaire concerned with presence of current or previous breast masses and recognition of associated signs and symptoms, Table 4 demonstrates the types of 35 breast masses in the three groups of participants, in which breast masses are encountered by the these patients with corresponding typical signs and symptoms. Fibrocystic disease of the breast is by far was the commonest type of breast masses (23 cases) including 2 cases diagnosed as simple breast cyst, 12 cases of fibroadenosis, 7 cases are of nonproliferative type and 2 cases are of proliferative type. Other occasional cases of different breast masses were shown in Table 4, interestingly two of them are ductal carcinoma of the breast, one has underwent mastectomy and other one is a teacher aged 45 years of age with neglected mass in the left breast, examined by the radiologist as having an ill-defined speculated heterogenous mass with increased echogenicity and associated ipsilateral supraclavicular lymph node enlargement. Fine needle aspiration cytology was performed for the patient from the hard mass and the supraclavicular lymph node which revealed ductal carcinoma of the breast with supraclavicular lymph node metastasis(stage IV), the woman told a history of one year feeling of hard breast lump and swelling, she harbor the mass with neglection, been unable to interpret the cause of the swelling all that time with feeling afraid sometimes. She was referred to the surgeon to arrange for management.

IV. DISCUSSION

Our study found that knowledge about breast cancer is acceptable among the targeted educated population. About 74.8% realized that is breast cancer is the commonest among female population in Iraq, while almost three quarter of the study sample answer that is BSE is a method for early detection of breast cancer. It was interested to note that 80.3% had already heard about BSE(figure 1), however, only about 43.9% and 27.8% knew the procedure and the best time to perform the BSE, this is agreed with a study held in Al-Mansour Medical institute in Baghdad/ Iraq which conclude that most of the female participants had knowledge about breast cancer and BSE but with bad practice[16].

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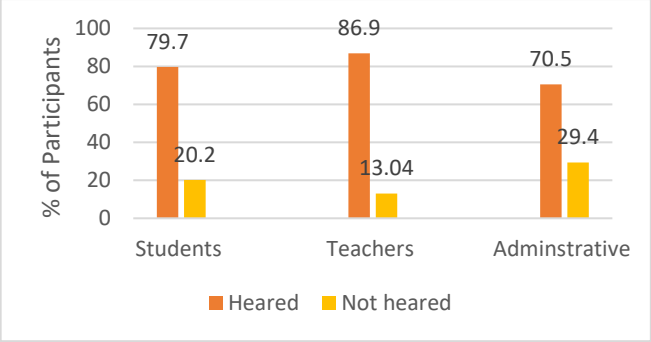

Figure 1: Frequency of hearing of educated women about breast self-examination

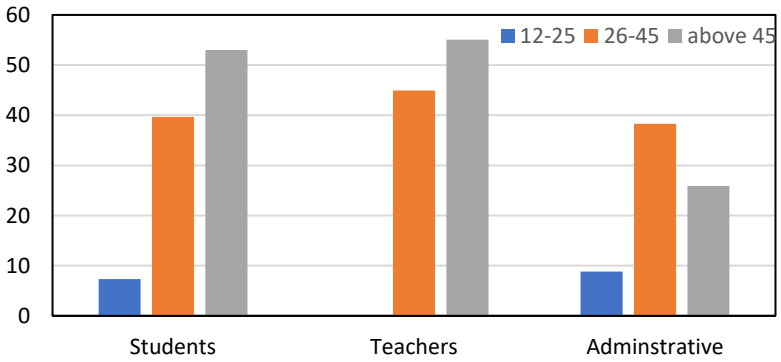

Figure 2: Frequency of knowledge of most affected age group by breast cancer

Other studies conducted regarding knowledge about breast cancer and BSE. Only few reported correct information on the performance and timing of BSE indicating low rate of practice. In a study from Saudi Arabia mere knowledge, attitude and practice were evaluated among female schoolteachers[17], about 88% had limited level of knowledge. Our respondents had better knowledge of risk factors of breast cancer, 53.4% knew that increasing age is a risk factor of breast cancer, while only 3% in the Saudi study informed the effect of aging. None of the Saudi respondents linked age at menarche or menopause to increased risk of the disease, but in our study 54%, 38.8% recognized the association respectively. Another study carried out among female secondary-school students in Jeddah demonstrated that the level of knowledge of risk factors of breast cancer was very low; 80% failed to answer 50% of the questions correctly[18]. Only 39.6% reported ever hearing about BSE, and a mere 14% and 7% respectively knew its correct frequency and timing, however, 82.4% had a positive attitude towards learning BSE. Another survey in Saudi Arabia again emphasized the limited knowledge and practice among female Saudi Arabian students in school and colleges[19].

A Jordanian study conducted among 163 nurses and 178 teachers showed that profession, age, and family history significantly influenced breast cancer awareness[20]. Most of the nurses (88.3%) were able to correctly answer the questions, the mean awareness score for a similar study among female health workers in Tehran demonstrated that their knowledge was unsatisfactory and concluded that Iranian women needed more education about breast cancer[21]. That finding was agreed by another survey from Iran[22]. On the other hand, in a teaching hospital in karachi, 35% of Pakistani nurses had fairly good level of knowledge about BC risk factor[23]. In Turkey, it was observed that the knowledge increased and the perceived health beliefs improved among university students after peer and group education[24]. Another study was conducted in Institute of technology in Di-Qar

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city/Iraq, conclude that the overall knowledge of a sample of educated women about breast cancer was deficient and the practice of BSE was very minimum and higher potentials are required to encourage BSE and learn women the correct manner to conduct BSE using internet and TV as a major source of notification and facts in most women[25]. This was similar to a survey on 230 nursing staff in South India about their BSE knowledge which was low and very low practice of BSE[26]. In parallel a study was done by Alharbi et al.[27] in Kuwait which points to the inadequate knowledge of female participants about breast cancer and recognized the negative influence of low knowledge on the practice of BSE. Also this observation is in accordance with the study among undergraduate students in university of Buea/Cameroon which highlighted the knowledge gap that present in the practice of BSE[28]. A study done in university of Dammam enrolled Saudi female students pointed that they have mild knowledge of about breast cancer and unclear information about risk factors of it with rare practice of BSE[29].

The current study also included the finding of current and previous breast masses shown in (Table 4), a variety of diagnoses of breast masses using fine needle aspiration cytology and histopathology confirmed lumpectomies. Fibrocystic disease of the breast was the commonest as its common incidence among breast lumps recognized where it found in 50% of female aged 30 and above[30, 31], another less common breast lesion seen in the Table. An interesting finding in a secondary school teacher who harbor a malignant breast mass in advanced stage with epsilateral supraclavicular lymph node involvement, she was unaware about the possibility of cancer and not informed previously about the presenting signs and symptoms also she was afraid from medical consultation and the mass was exist since one year with recent heaviness and swelling in the breast.

V. CONCLUSION AND RECOMMENDATIONS

The study points to the probably satisfactory knowledge of educated female about breast cancer and breast self-examination, variable knowledge of various breast cancer risk factors along with inadequate practice of BSE as a method of early detection, Given that breast cancer is the commonest cancer in Iraq and other Eastern Mediterranean Region countries, many patients are still diagnosed at advanced stage[32, 33] resulting in higher mortality rates[1]. Detection of breast cancer at an early stage remain the most essential step for breast cancer control. Primary health care clinic should play a pivotal role in strengthening awareness about breast health and breast cancer prevention behaviors among females. Sensitization campaign using audiovisual media and internet and other urgent health education programs designed to create awareness about encouraging BSE, early warning signs, risk factors and early detection procedures.

Although controversy exist over the effectiveness of BSE in reducing mortality from breast cancer [34], it is generally sensitive and inexpensive technique that remain important in countries with limited resources[35]. Until medical resources for routine annual mammography screening in Iraq is allowed efforts should be directed towards encouraging women to practice BSE.

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